

COMPUTERWORLD

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MIS puts PC mavens in support role

BY MICHAEL ALEXANDER
CW STAFF

Lead users, gurus, PC junkies, mavens — there are as many labels as there are corporations — are playing a supporting role to MIS even though it is not in their job descriptions. More than ever, these technically astute users are handling personal computer support and other MIS duties when MIS is unable to keep up with demand.

MIS managers are finding themselves increasingly under pressure — caught up with setting standards, implementing new systems and all the other logistics of running an information center. "We're barely hanging on to the technology rocket," one manager said recently.

In the scramble to keep up with the demands of the job, training and support are being shunted aside or are not being

Continued on page 4

They're here! AS/400s sited

Power-hungry users breathe sigh of relief as mid-range deliveries begin

BY JAMES DALY
CW STAFF

MIS managers across America anxiously listened for the squeal of braking IBM delivery trucks last week as general availability shipments of the Application System/400 began to more than 250 power-starved customers.

"Thank God; it's about time," said Diane Dorsey, a computer operations manager at H. B. Fuller Co. in St. Paul, Minn. She said the addition of a Model B10 and B60 will add much-needed data processing muscle to a pair of IBM System/38s that have simply "run out of steam."

The shipments marked the beginning of widespread access to all six models of the AS/400, which cemented together two large chunks of IBM's fragmented mid-range processor line when it merged the System/36 and 38 lines into a unified architecture.

Dorsey summed up the feelings of many who had waited on pins and needles since the

AS/400's June announcement in New York. The series addressed the problem of IBM systems users who had reached the limit of their computing power and were faced with a costly and difficult migration to another architecture should they desire more.

IT'S exactly what we need; we can breathe again."

JOE DIPASQUALE
GOLDMAN ASSOCIATES

"It's exactly what we need; we can breathe again," commented Joe DiPasquale, vice-president of finance at Goldman Associates of New York, Inc. DiPasquale is replacing a System/34 with a B20 to handle the appliance manufacturer's business applications.

Although few AS/400s had been shoved into place and were up and running by late last week, buyers had no shortage of plans

for their new machines.

The American Motorcyclist Association in Westerville, Ohio, will use a B30 to keep tabs on its 150,000 members, coordinate 5,000 events each year and store records and archives for a future museum. Applause, Inc. in Woodland Hills, Calif., will tie its machine into a network linking its buying offices in the Orient with distribution points in California and New Jersey.

Many early purchasers based their decision to swim boldly into uncharted mid-range waters on their satisfaction with earlier IBM mid-range system offerings. The ranks of new AS/400 users are heavily populated by ex-System/36 and 38 operators who foresee few problems in the changeover.

"We're an old System/38 house, so our learning curve will be very short. I don't foresee training as any tremendous task," said John Sutton, an MIS manager at Chemical Fabrics Corp. in Merrimack, N.H.

Continued on page 8

Computer Associates' drive wins respect but few friends

BY CLINTON WILDER
CW STAFF

"Success is only good if it is accepted with great modesty."

Gen. Georges F. Doriot,
the late high-tech
venture capitalist

By every business yardstick, Computer Associates International, Inc. is a hugely successful company. In just a few years, it has vaulted from an arcane systems software niche to king of the IBM data center. It has become the world's largest independent software vendor and has delighted Wall Street by

expanding its already hefty profit margins along the way.

But CA's success has had a price: The industry's largest player has also become one of its most controversial.

One year after swallowing its biggest competitor, Uccel Corp., CA's aggressive strategy and hard-driving corporate culture have earned it both devoted supporters and bitter enemies. Where some see a strong technology company, others see arrogance and obsession with the bottom line. Where some see fiscal strength and healthy competition for IBM, others see a disdain for internal development and a preoccupation with growth-by-acquisition.

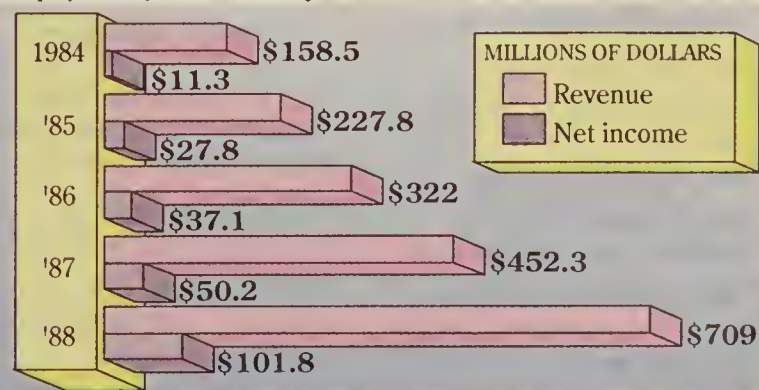
Aiming for a billion

By March 1989, CA could reach \$1 billion in annual revenue, far outstripping its nearest foes, if it achieves a growth rate of 41% — very reachable by CA standards.

But even some of CA's big-

Revenue grows fast; profits, faster

Computer Associates outraced its own pace in fiscal 1988 to zoom to the top of the software industry



SOURCE: COMPUTER ASSOCIATES INTERNATIONAL, INC.
CW CHART

gest backers question its ability to manage its growth on this scale. Since 1982, CA has purchased more than a dozen companies, spending more than \$1 billion (see chart page 97). Many wonder about the long-term im-

pact of this acquisition strategy on its product line, its customers and the hundreds of software vendors that are potential CA buyout targets.

"I think you'd have to recognize the fact that you'd be dealing with a billion dollar company that could end up having account control, and I'm not sure I like that," says Ronald Johnson, operations and technical support manager at Newell Co. in Freeport, Ill.

Mergers are nothing new in the software business, and scores of vendors — the former

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Rules of the game

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"You had to reserve your going-away happy hour in advance."

SCOTT SPECK
FORMER UCCEL CORP.
CONSULTANT

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NEWS

Access Technology is newest kid on the Block

BY NELL MARGOLIS
CW STAFF

KANSAS CITY, Mo. — CompuServe, Inc. signed an agreement last week to acquire software manufacturer Access Technology, Inc. in a stock deal valued at about \$36.7 million.

Compuserve is the wholly owned subsidiary of tax preparation giant H&R Block, Inc. and operates an on-line database service.

Bob Massie, executive vice-president of the CompuServe Software Products Division, said Access, which manufactures the 20/20 spreadsheet program, will be folded into his division, which was formed 20 months ago to catapult CompuServe into the software arena and promote its growth through complementary acquisitions.

The merger "represents our commitment to be a really solid player in the software industry," Massie said.

Natick, Mass.-based Access showed a revenue increase of 56.5% to \$18.3 million and net earnings that were up 54% to \$2.5 million for its fiscal year ended April 30.

Block stock

The merger, which Massie said has been under discussion for close to a year, will give Access the fiscal muscle it needs to ex-

pand, according to Allen Kluchman, the company's founder and chief executive officer. Original plans to raise expansion money through an initial public stock offering last fall were thwarted when the stock market crashed on the eve of the contemplated offering; the company will receive H&R Block stock to complete the merger.

"We're so flooded with opportunities [through the merger] that it's hard to know where to turn first," said Carl Nelson, Access' marketing vice-president.

Access will become the third and largest component of CompuServe Software Products. It joins prior acquirees CompuServe Data Technologies (formerly Software House), a System 1022 database and System 1032 database and fourth-generation language marketer, as well as financial software provider Collier-Jackson, Inc. — both of which open up integration avenues for 20/20, Nelson said.

As was the case generally with Software House and Collier-Jackson, current Access management will remain in place, both firms said.

The merger, which has been approved by both Block's and Access' boards of directors, is expected to close within 60 days, pending approval from Access shareholders and relevant regulatory bodies.

Third-party system

HP will maintain other vendors' equipment

BY J. A. SAVAGE
CW STAFF

MOUNTAIN VIEW, Calif. — Hewlett-Packard Co. today jumped on the coattails of IBM's announcement earlier this month of providing maintenance services for other vendors' machines, but HP's services are a coat of another color. Not only will HP service equipment from other vendors, but it will service shops with no HP equipment at all.

HP, which has been providing hardware and software services on a case-by-case basis for three years, decided that the third-party service market was lucrative enough to commit a new division, said David Carver, general manager of the multi-vendor support operation.

With its new division, HP joins not only IBM but Digital Equipment Corp. — which has had such a business since 1983 — Xerox Corp., Honeywell Bull, Inc. and General Electric Co.

"With the advent of [industry-

wide] standards, we were looking to differentiate ourselves," Carver said.

The HP operation is first geared for support from the bottom up; its main emphasis is on personal computers, peripherals and local-area networks, but it will also service mainframes if requested.

There is no standard price list for services, as the business is starting out with custom contracts, according to Carver.

Services offered include repair and restoration of equipment that is operating at a level below standard, preventive maintenance, software maintenance and installation. "That will probably include facsimile machines and copiers," Carver said.

Customers may also choose between a standard coverage period, for instance 9 a.m. to 5 p.m., or custom hours. Response times are also flexible, depending on the critical nature of the operation. Carver said his division will even coordinate other service contractors.

C

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NEC desktop upgrade buries 80386 micro

BY ALAN J. RYAN
CW STAFF

BOXBORO, Mass. — NEC Information Systems, Inc. last week announced a desktop computer based on Intel Corp.'s 80386SX chip that it said will supersede one of its two 80386-based microcomputers. In addition, the firm unveiled what it said is the industry's first 386SX-based portable, beating high-profile portable vendor Compaq Computer Corp. to the punch.

With the availability of the new 16-MHz Powermate SX, the company is pulling the plug on one of its existing 386-based desktop systems. The earlier 16-MHz Powermate 386 computer "offers minimal performance advantage over the SX at a higher price," said Richard Miller, director of Compaq's entry systems marketing. Miller said the company has told dealers it will cease taking orders for the Powermate 386 16-MHz machine.

Miller said applications running on the SX models "only run approximately 10% slower than on the 386" 16-MHz model, adding that most users would not be able to notice any real difference between the two. "For there to be any real differentiation, you'd need to go to the [Powermate] 20-MHz 386," he said. Miller added that NEC will be upgrading its 386 line later this year.

The SX chip allows applications designed for the 32-bit data

bus of the 80386 microprocessor to run instead on the slower 16-bit data path of the SX at a 32-bit processing speed.

For current users of 80286-based NEC workstations, NEC will offer 80386SX upgrades by early next year, Miller said. The users will be able to swap out their old motherboards for the 386SX boards. Miller said initial demand for the systems will require most of the motherboards to be put into complete systems for the next several months.

September due date

The company said its Powermate Portable SX will begin shipping in mid-September. The Powermate SX unit began shipping Friday for \$4,495. Both come equipped with 2M bytes of random-access memory and a 42M-byte hard disk, and both are bundled with Microsoft Corp.'s Windows 386 and DOS 3.3. NEC's implementation of DOS 4.0 has not yet been announced. Miller said NEC will release its version of OS/2 in September but will not bundle that in with the new systems because it has seen no demand for the operating system.

"NEC is following the strategy of offering the most popular configurations at prices pegged just below Compaq's prices," said Michael Goulde, director of corporate information solutions at CAP International, Inc. in Norwell, Mass. "They are not bargains."

However, he said, "NEC is

hitting the market with 2M bytes, while Zenith Data Systems recently announced it is cutting back to 1M byte. With Windows 386 and with the forthcoming evolution of the OS/2 market, that memory will be needed."

Both the portable and small-footprint desktop unit are expandable to 16M bytes of RAM.

The portable unit offers a gas plasma display with a 640- by 480-pixel Video Graphics Array mode that supports 16 shades. "The ability to do shading opens

the computer to applications like computer-aided design and desktop publishing," Miller said. The portable, which can be easily disassembled to plug into a larger keyboard or other monitor and can also be attached to a local-area network, will sell for \$6,595.

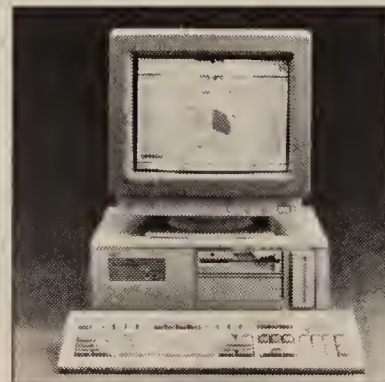
While NEC had considered building an IBM Micro Channel Architecture-compatible machine, Miller said those plans have been put on hold. "We had interest in it, but our dealers don't," he said.

Smaller is bigger

NEC is offering portable and desktop systems, based on the Intel 80386SX microprocessor, with compact footprints



NEC Powermate
Portable SX
(base unit)



NEC Powermate SX
(base unit)

Processor: 80386SX	Processor: 80386SX
Memory: 2M bytes, expandable to 16M bytes of RAM	Memory: 2M bytes, expandable to 16M bytes of RAM
Storage: 1.44M-byte 3½-in. floppy disk drive 42M-byte hard disk drive	Storage: 1.2M-byte or 1.44M-byte floppy disk drive 42M-byte hard disk drive
Speed: 16 MHz	Speed: 16 MHz
Expansion: Three full-size slots	Expansion: Six slots
Price: \$6,595	Price: \$4,495

SOURCE: NEC INFORMATION SYSTEMS, INC.
CW CHART

PC mavens

FROM PAGE 1

handled as well as they may once have been. As the base of end users expands, the problems are compounded.

"The number of PCs being delivered to large organizations and the scarcity of information about PCs are overwhelming training centers," said Glenn Hall, manager of systems planning and requisition at the U.S. Department of the Treasury in Washington, D.C. "We simply cannot provide individual hands-on training and support."

The solution for some managers has been to cultivate the PC mavens within their organizations who can help fellow workers recover from hard-disk crashes, create complex macros in Lotus Development Corp.'s 1-2-3 or Ansa Software's Paradox and perform other advanced applications.

Hall relies on a network of about two dozen PC gurus at several sites across the country

to play a supporting role to more than 720 PC users.

While many MIS managers said they rely considerably on these in-house experts, the arrangement is informal. And relying on non-MIS employees to assist with support and other traditional MIS tasks is not without risks, some MIS managers warned.

Allowing end users free rein in selecting software could easily lead to end users creating databases that are incompatible among departments, for example. "We have the increased responsibility of making sure that there is connectability between systems, that data integrity is maintained and that the interfaces work," one manager said.

Invariably, the guru has to juggle the demands of his own job in addition to supporting end users. The guru assumes this responsibility because of a personal interest in microcomputers and a desire to be a team player within the company, Hall said.

These gurus may also be involved in setting budgets, rec-

ommending and purchasing hardware and software and other duties.

The in-house PC experts at Parker Pen USA Ltd. in Janesville, Wis., are helping MIS handle a major conversion from an IBM 370 to a System/38, according to MIS manager Dennis Hopper. "Anywhere that we are implementing a PC as a workstation, they are helping us determine the equipment requirements and testing applications to make sure that they work with

the 38 with upload-download capability," Hopper said.

But supporting end users ultimately remains the responsibility of MIS, according to Bob Fuhr, director of management information systems at Dixon Ticonderoga Co. in Vero Beach, Fla. "If I relied too much on end users to support themselves, I would have a heterogeneous collection of equipment and software and there is no way we could service everyone," Fuhr said.

CORRECTIONS

Fibronics International, Inc.'s second-quarter results [CW, Aug. 15] came in at \$10.4 million, 20% more than the \$8.6 million reported for the same period in 1987.

Alliant Computer Systems Corp. operates its own direct sales and service organization in Europe and Japan [CW, July 18].

In the Inside Lines item, "Wid-

ening the Netview/PC funnel," Ray Blanchette was incorrectly identified as TSB's director of projects [CW, July 25]. Blanchette has no connection with TSB.

Screenextender from Stairway Software, Inc. [CW, Aug. 8] manages the screen during Wordstar sessions to provide more than 25 rows and 80 columns of screen text, not "to provide 25 rows and 80 columns of text," as was reported.

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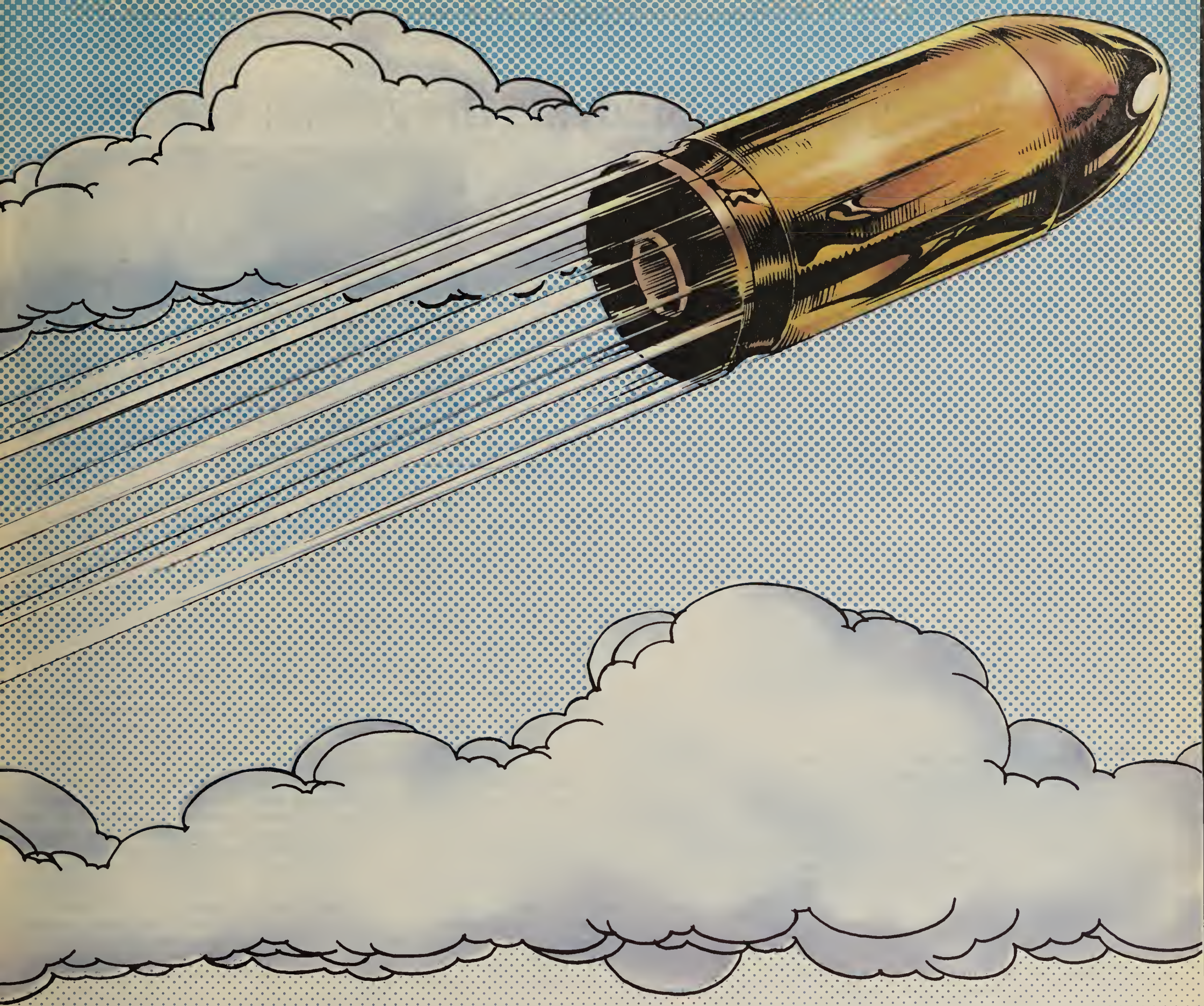
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NEWS SHORTS

DEC exec spills price, RISC plans

Digital Equipment Corp. will "radically modify" its pricing structure for products and services next month, said Dick Poulson, the vice-president responsible for DEC's general international area, at a DEC Users Society meeting in Australia. "We cannot compete with IBM in complex, high-support financial institution environments and then compete with Sun Microsystems in what may some day be a commodity workstation environment without major changes to our pricing approach," Poulson explained.

He also said the company will soon announce reduced instruction set computing (RISC) technology products. "The key to our approach in using RISC is that this technology will be used as a fully compatible player in our overall distributed computing architecture," he said, adding that the new year will bring "a whole new set of products using that technology through a powerful new set of workstations."

Sun to add TI chips to supply

Texas Instruments, Inc. is expected to become Sun Microsystems, Inc.'s fourth Scalable Processor Architecture (Sparc) microprocessor chip supplier this week. "I think Sun has more suppliers than users," joked Drew Peck, a semiconductor analyst at Donaldson, Lufkin & Jenrette, Inc. But Peck noted that the deal will be consistent with TI's strategy of producing more high-end chips. TI is also expected to use the Sparc chip in its own workstations, joining AT&T, Xerox Corp. and Unisys Corp.

CCA division spun off to Xerox

Xerox Corp. announced an agreement last week to purchase the advanced information technology division of Computer Corporation of America (CCA) from CCA's parent company, Crownstek, Inc. Xerox will fold the unit into its custom systems division, which develops customized document processing systems. Also, through a technology exchange agreement, Xerox will resell CCA's Model 204 database management system, and the two companies will share concepts in database management.

GOSIP, Posix standards advance

The recently renamed National Bureau of Standards published the Government Open Systems Interconnect Profile (GOSIP) for computer networking last week and said the federal information processing standard will be effective Feb. 15, 1989. Federal agencies will then have an 18-month grace period before GOSIP becomes "compulsory and binding" for computer procurements. On another front, the IEEE Standards Board approved the Posix standard last week.

PBX link for ISDN

Northern Telecom, Inc. introduced an "ISDN-like" interface last week said to provide user devices with access to Integrated Services Digital Network services but still does not provide full-scale ISDN compatibility.

The High Speed Data Module provides a 64K bit/sec. link between the vendor's SL/1 private branch exchange switch and synchronous data devices with V.35 ports, such as IBM cluster controllers, according to Dan Callahan, Northern Telecom product manager. The product will be available early next year. Pricing is not yet available.

PC trade-in deal extended

IBM announced through newspaper advertisements last week that it will continue its promotion that allows users to trade in their older IBM Personal Computers for PS/2s, although the company admits that it is unsure how well the promotion has been accepted.

IBM spokesman Roger Savitt said last week that with approximately 2,000 authorized IBM microcomputer dealerships, it is still too soon to tell whether the program has met its goal of increasing sales of the PS/2 family.

Studying the greenhouse effect

BY KATHY CHIN LEONG
CW STAFF

NEW YORK — In testimony before the U.S. Senate this summer, Dr. James E. Hansen, chief of the prestigious National Aeronautics and Space Administration's Goddard Institute for Space Studies, warned that the recent surge of heat waves and droughts are a direct result of the greenhouse effect.

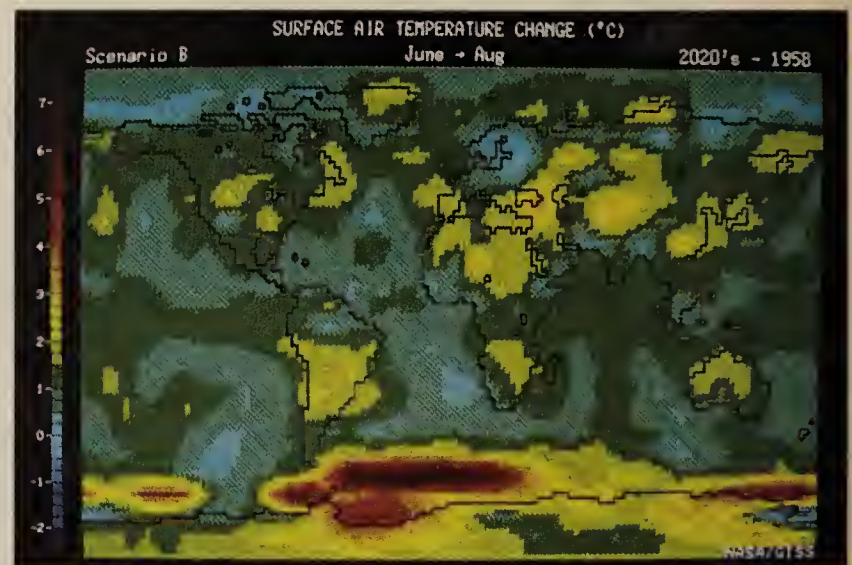
Hansen's testimony received nationwide publicity, but what people did not know was that he based his findings on observations and a 20-year-old computer model known as the Climate Program.

Written in Fortran on an AMDahl Corp. 470V/6, the Climate Program represents the basis for many scientific atmospheric conclusions, particularly the greenhouse effect. This condition can be described as the release of certain gases that get absorbed into the atmosphere and trap heat on the earth's surface.

According to Goddard staff scientist Gary Russell, the program was developed 20 years ago by a professor at the University of California at Los Angeles. The Goddard Institute received a copy 18 years ago and has been refining it ever since.

The model, which contains 20,000 lines of code, provides scientists with a variety of future scenarios on overall world climate. Because the program is based on the laws of physics, data on world topography and atmospheric conditions of the past, findings are quite accurate, researchers said.

"We need a computer model because these calculations are not something you can simply



How high will the sea be in 2100? Climate Program knows

figure out on the back of an envelope," Russell said. "With this program, we know without a doubt that the current warm temperatures are increasing due to the greenhouse effect."

Radiation levels

The program can also give scientists specific data on how the melting of the world's ice caps will raise the sea level. By the year 2100, the program predicts, the sea level will rise 40 centimeters.

Scientists here are also using the model to calculate the amount of radiation from space that hits the planet. It can be used to predict precipitation, snowfall, ground wetness and the amount of ice on the ocean, Russell said. It can take up to six months to run one simulation, he added.

For every piece of data extracted, a scientist must write a computer program to activate the "brains" of the climate application. To do a wind prediction for the earth can take as many as 10,000 calculations, taking into

consideration humidity and temperature. "You would have to map out every grid point throughout the world at intervals of every 15 minutes," Russell said. "That's 7,200 grid points. It takes time."

Scientists rely on three scenarios based on a time frame of 1958 to 1985 to make their predictions.

The first scenario estimates what the world would be like in 2050, for instance, if the amount of greenhouse gases continue to increase. The second simulation takes the same time frame and predicts the condition of the earth's atmosphere if the amount of greenhouse gases are gradually reduced. The third shows the earth's climate in a world where the greenhouse gases are drastically reduced.

On the East Coast, the model shows that the coldest time of year between 1960 and 2010 in the second scenario will occur in January 1998, Russell said. And the following June will be the hottest time of year on the East Coast.

On-Line sees loss; president resigns

BY NELL MARGOLIS
CW STAFF

FORT LEE, N.J. — A series of forward-looking moves praised at one time as bold by industry analysts continued to backfire last week on On-Line Software International, Inc. During the week, the company warned of an imminent first-quarter loss and announced the resignation of President Howard Sorgen.

On-Line, an IBM mainframe software vendor that has made several forays into other markets during the past two years, reported a loss of close to \$4 million for its 1988 fiscal fourth quarter, ending a 12-quarter flow of black ink. Despite cuts in expenses during the ensuing months, the company is predicting a revenue shortfall in the quarter ending Aug. 31 as well as a loss of approximately \$1.3 mil-

lion, exclusive of an extraordinary gain, said Edward Siegel, chief financial officer.

In a prepared statement, On-Line Chairman and Chief Executive Officer Jack Berdy, who also replaces the departing Sorgen as president and chief operating officer, targeted a lag in domestic direct sales as the principal cause for the expected shortfall, "although revenue was somewhat short of expectations in almost all areas of our business."

Sorgen's departure is "clearly in response to the company's troubles," said Kenneth Burke, an analyst at Alex Brown & Sons. "On-Line made a reasonable bet at great expense that at this point doesn't seem to be taking off. I guess [Sorgen] got the nod as the sacrificial lamb."

What the firm bet on was its ability to acquire its way into rapid growth beyond its tradi-

tional IBM CICS markets, said Charlotte Walker, an analyst at County Securities Corp. USA in New York. On-Line's 1986 acquisition of Martin Marietta Software Technologies, Inc., for example, brought On-Line a large maintenance base but also "a bunch of yesterday's products," Walker said.

Similarly, "they have a good CASE offering, but they're having a lot of trouble selling it," she said. Complicating matters, she added, is the fact that On-Line, a successful telemarketing pioneer, has "built up a direct sales force for the first time in their history, but it isn't yet producing."

What's more, Walker said, "they're changing the compensation structure for their telemarketing group. Combine that with everything else, and whammo!"

Ultrix release supports Posix

BY STANLEY GIBSON
CW STAFF

BOSTON — Posix compliance and clustering but no symmetrical multiprocessing are in the Ultrix release announced by Digital Equipment Corp. last week.

DEC's latest version of AT&T's Unix operating system, Ultrix 32 Version 3.0, conforms to the IEEE 1003.1 Posix standard, which was formally approved last week. It also complies with the AT&T System V Interface Definition (SVID) Release II, Volume 1.

The release brings clustering to Ultrix-based systems for the first time but

does not offer symmetrical multiprocessing, a key capability of DEC's VAX line announced under Version 5 of the VMS operating system.

DEC's 8800 (Polar Star) and 6200 (Calypso) series are capable of symmetrical multiprocessing, but until a version of Ultrix capable of that is offered, those systems will be sold as Ultrix systems in only two-processor versions, capable of asymmetrical multiprocessing.

DEC's introduction of an Ultrix version with symmetrical multiprocessing is tied to the Open Software Foundation (OSF) implementation of that technology, according to DEC officials. The core tech-

nology being used by OSF was created by IBM and reportedly contains symmetrical capabilities, said Glenn Johnson, manager of the Ultrix engineering group at DEC.

"OSF members have said they want [symmetrical]," Johnson said. He explained that although OSF employees are able to work with the technology, member firms cannot yet examine the IBM code because of legal hurdles.

In addition to Posix and SVID compliance, Ultrix 32 also has some enhancements based on the University of California at Berkeley Unix 4.3. The new version complies with several other standards, including the OSF's Application Environment Specification Level 0.

Ultrix 32 Version 3.0 allows as many as 16 devices — VAX CPUs and HSC70s

— to cluster, using Sun Microsystems, Inc. Network File System (NFS) protocols. Ultrix 32 prices range from \$2,100 on the Microvax 2000 to \$56,058 on the VAX 8820.

Also announced were the following:

- Ultrix Worksystem Software, which provides a single interface that runs across all major DEC workstation platforms and is the first implementation of the Decwindows program.

- Software intended to integrate DEC's VMS and Ultrix operating systems: VMS/Ultrix Connection, Ultrix Mail Connection and Decnet-Ultrix Version 3. The VMS/Ultrix connection provides VMS services to Unix clients by adding Transmission Control Protocol/Internet Protocol and NFS on VMS.

DEC tends IBM connectivity with Microvax base

BY ELISABETH HORWITT
CW STAFF

BOSTON — Digital Equipment Corp. administered a long-expected and much-needed shot in the arm to its IBM connectivity products last week, with more powerful, feature-rich versions based on a Microvax II hardware platform.

DEC introduced two Decnet-to-Systems Network Architecture (SNA) gateways, a Decnet-to-Decnet router and an X.25 gateway, all based on the Microserver architecture, with different software and hardware add-ons. The Microserver uses very large-scale integration circuitry, a Microvax II chip and a new operating system to provide up to four times as much throughput and support for as much as four times the number of terminal sessions as DEC's existing gateways and routers, the vendor said.

By using software rather than multiple boards to put different networking functions on the Microserver, DEC has created a system that is "far more reliable and a hell of a lot faster" than existing gateways and routers, said Steven Wendler, program director of Office Information Systems at the Gartner Group, Inc.

The upgraded Decnet-to-SNA gateways in particular are a stab at IBM, which until now had not had much competition for IBM-to-DEC gateways.

The following software products for the Microserver were introduced:

- The Decnet/SNA Gateway for Channel Transport, which links Decnet directly to an IBM 370 channel and supports 255 sessions. It costs \$44,500 and is scheduled to be available in September.
- The Decnet/SNA Gateway for Synchronous Transport, which links to an IBM front-end processor and supports as many as 128 sessions. It costs \$20,500. DEC's existing PDP-11-based Decnet/SNA Gateway supports only 32 sessions.
- Decrouter 2000 software, which routes transmissions over 256K synchronous long-distance links between Decnet or Open Systems Interconnect networks. It will support 1.5M bit/sec. T1 speeds at a future date, DEC said. It costs \$12,500.
- The X.25 Router 2000 software, which acts as a gateway to an X.25 network. Priced at \$16,500, it is available now.

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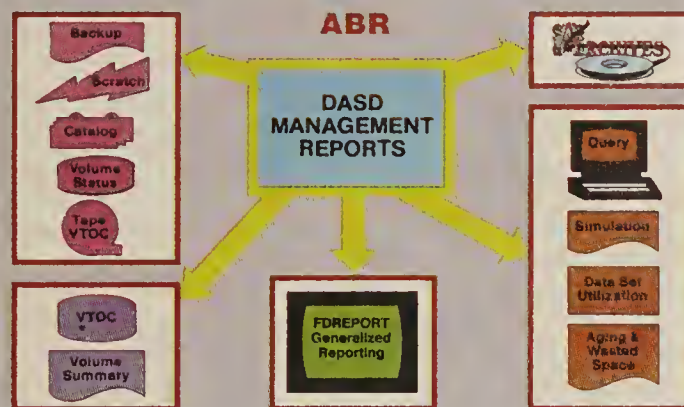
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Borland goes for code pros

BY STEPHEN JONES
CW STAFF

SCOTTS VALLEY, Calif. — In its continuing effort to shed its image as a low-end software utility vendor, Borland International will announce programming language upgrades and a new debugger today that are aimed at corporate programmers and industry leader Microsoft Corp.

Borland built its fortunes on low-price software for computer hackers, but its new high-performance Turbo Assembler and Debugger appears to be designed with the professional programmer in mind.

One analyst who has seen the Turbo Assembler and Debugger said its ability to tap open a program and check it from a variety of views is advanced enough that it could challenge Microsoft's high-end Codeview debugger.

"Borland is clearly trying to go after Microsoft's stronghold — the professional programmer," said the source, who asked not to be identified.

The Turbo Assembler and Debugger, which costs \$149.95, features source- and data-level debugging, overlapping windows for multiple views and dual-monitor support.

Borland will also announce Turbo Pascal 5.0, which features integrated debugging, dynamic overlay support and "smart" linking of code and data. Sources said the programming tool compiles as many as 34,000 lines of code per minute. Turbo Pascal costs \$149.95 and can be purchased with the Turbo Assembler and Debugger for \$250.

Additional upgrades

Another compiler upgrade, Turbo C 2.0, also features an integrated debugger and an optimizing C compiler, support for all six memory models and language extensions such as in-line assembly and support for pseudo variables.

Turbo C 2.0 compiles as much as 30% faster than its predecessor, Turbo C 1.5, and costs \$149.95. The compiler sells for \$250 when packaged with the Turbo Assembler and Debugger.

Each Turbo product was designed to be compatible with other tools in the line, including the same Borland graphics interface and user interface, help programs and menuing system.

The debugger and the rest of the announced products will be available by the end of this month, according to sources close to the company.

They're here!

FROM PAGE 1

But the series has also drawn converts from other vendor's systems, who are eager to out-step their data processing bounds. Vincent Monitto, director of planning and data processing at the New York State Lottery in Albany, is abandoning his Motorola, Inc. IV/90 minicomputer, not only because the B30 offered more processing power but because a local value-added reseller offered 100 hours of free service to early customers.

Monitto is currently talking to two data conversion companies to move the Motorola text files to the AS/400 and has scrapped IBM's one-document-at-a-time conversion method because "it seems more complex than we would like."

Despite unabashed enthusiasm for the series on several fronts, the question of moving to the AS/400's function-packed OS/400 operating system drew a decidedly mixed response.

Because the AS/400 can support data in a System/36 as well as a System/38 mode, several users downplayed the need to do too much too quickly.

Not quite ready

"We're not prepared to take that on right now," said Frank Campbell, DP director at Jefferson Regional Medical Center in Pine Bluff, Ark., whose data will remain in a System/36 mode when it is transferred over to a new B60. "We'll have a big enough challenge getting everything over to the new system."

Others, however, plan to dive in headfirst. Alton Lasiter, who

Small MIS shops looking for an inexpensive road to high power may do well to check out IBM's Application System/400 mid-range processors. Larger firms? Well, there's a little company called Digital Equipment Corp. you may want to contact.

That is the conclusion of a report being prepared by The Sierra Group, Inc., a market research house in Tempe, Ariz., that compares the cost of a fully configured AS/400 setup with a similar VAX offering at different user levels.

At the eight-user level, the AS/400 establishes parity with DEC on a hardware, software and maintenance basis, but DEC's software maintenance makes it a more pricey alternative. At 16 users, the AS/400 is again less expensive, but hardware prices begin to inch up.

The AS/400's advantage crumbles at the 32-user level, however, when higher hardware costs begin to strike. By the time it reaches a 50-user level, the hardware costs for the AS/400 are nearly double those of the VAX, and the price of operating the entire system is more than \$100,000 more expensive.

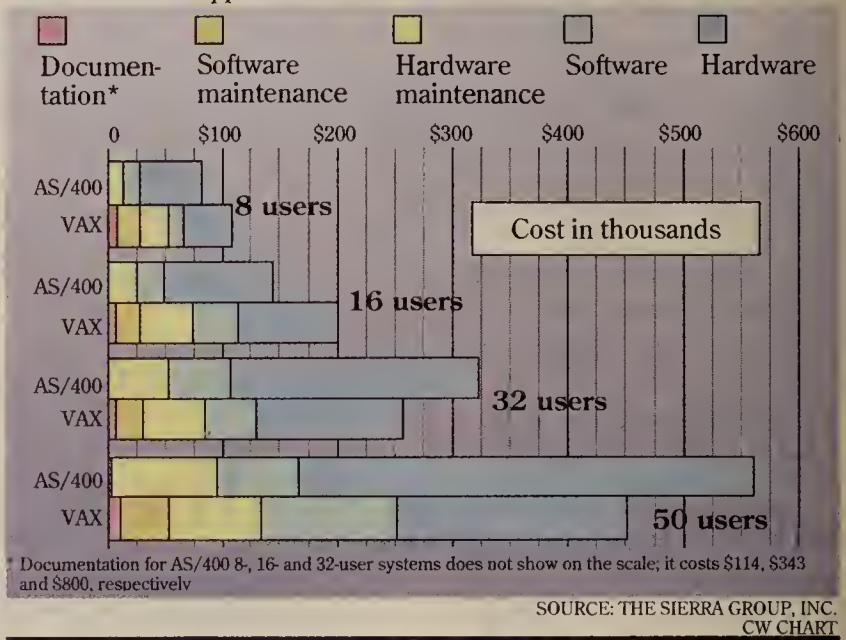
The report also says that with the AS/400,

heads the Compu-Tech contract programming team located in Nederland, Texas, "will be going to the OS/400 mode right off the bat, because we'll have customers who will need work done in

Getting your money's worth

Dollars and sense

Costs for fully configured systems show IBM's AS/400 has a price advantage at the low end but that DEC's VAX is less expensive when more users are supported



IBM has raised the total cost of ownership an "ever-so-subtle" notch.

This move, which the report calls the work of a master marketing organization, began when IBM raised the prices of System/36 and 38 models to head off users who might balk at purchasing the more expensive AS/400. The net effect, the report concludes, is that IBM improves its bottom line on the mid-range and bucks industry trends for producing successively less expensive systems.

JAMES DALY

CASE system handles reverse engineering

BY NELL MARGOLIS
CW STAFF

SANTA MONICA, Calif. — A software development entry may be about to leverage reverse-engineering ability to vault ahead of the established vendors and push the boundaries of the crowded but slow computer-aided software engineering (CASE) market.

Ten years in the making, Errico Technologies, Inc. and its maiden product, AMS/Team, are slated for an official debut within the next six weeks, a company spokesman said. AMS/Team — AMS stands for Application Modernization System — is a repository-based software development automation platform that, according to Stephen Errico, founder, developer and chief executive officer, supports the reverse-engineering of existing Cobol applications as well as the design, creation and maintenance of new ones.

"I was very impressed with a

demonstration I saw," said an MIS executive at a major Silicon Valley company who asked not to be identified. "The structure [of AMS/Team] lets you train people to generate code relatively easily."

Uses design specs

The Errico offering, according to Stephen Errico, can generate a final software program directly from design-level specifications, employing a "specification interface," or a series of fill-in-the-blanks prompt-oriented screen panels.

In its first implementation, AMS/Team will be able to generate structured IBM VS Cobol source code and the source code necessary to support CICS execution through VSAM, Errico said. Work is underway to enable the software to generate the required interface language for IBM's IMS DB2 as well as SQL, he said.

A technology analyst at a Fortune 100 company, who also re-

quested anonymity, watched

AMS/Team develop an application. "It was generating Cobol against VSAM files," he said, "but you didn't have to know what it was generating; it knew that it was working in VSAM."

Despite numerous interruptions and a power failure at the plant, the Errico software created "5,600 lines of Cobol, including comments and declarations, in 2½ hours," the technology analyst said.

Errico is targeting the system not only at the aerospace/defense and scientific/technical markets generally seen as the hungriest for CASE tools but also at commercial MIS. One of its strongest suits, according to industry observers, is its promise of reverse-engineering capability, a boon to MIS directors facing maintenance backlogs that have been cited as responsible for as much as 80% of the overall effort of providing software.

"If [Errico's] got reverse-en-

gineering capacity, even in the most modest sense, he's got a very powerful draw," said Peter Levine, vice-president of software engineering strategies at the Gartner Group, Inc., a market research firm based in Stamford, Conn.

Senior Editor Rosemary Hamilton contributed to this report.

gineering capacity, even in the most modest sense, he's got a very powerful draw," said Peter Levine, vice-president of software engineering strategies at the Gartner Group, Inc., a market research firm based in Stamford, Conn.

One of a kind

Few products can even restructure code, Levine said; reverse-engineering — translating code back into design-level representations — is rarer still. According to Errico, AMS/Team's Retrospec module can do it.

The software itself translates existing source code into specification format and sends it to the repository, where it is evaluated and modified as necessary to correct whatever problems have made it less than satisfactory in the first place. It is then regenerated as new code.

By creating unique code, the Errico product avoids the problem of inefficient or redundant code that dogs products that resort to prepackaged modules, Errico Vice-President Nick Lira said.

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Microsoft grip tight on Apple crown

BY STEPHEN JONES
CW STAFF

Despite a rush from other software giants, Microsoft Corp. shows no signs of sharing the catbird seat in the Apple Computer, Inc. Macintosh software applications market.

Observers said challengers such as Ashton-Tate Corp. and Wordperfect Corp. stand little chance of knocking Microsoft off its lofty perch because of that company's overwhelming dominance in the market.

That might be good news for Microsoft, which ironically is

locked in a legal battle with Apple over graphical interfaces, but users could have less chance to pick and choose their Mac applications if the monopoly is not cracked in areas such as word processing and spreadsheets.

In addition to its strong technology, Microsoft has the intan-

gible advantage of history. As the first and only leader in the \$300 million Mac applications market, Microsoft has a huge installed base that is reluctant to make a wholesale switch to newcomers such as Ashton-Tate and its upcoming Full Impact spreadsheet.

"With the thousands of copies of Excel that we have, a new product would have to change

the world to convince us to change," said Rick Richardson, national director of technology development at Arthur Young. The firm owns about 4,000 copies each of Microsoft's Excel and Word for the Mac.

Big bucks

The reason that Richardson and others balk at the idea of swapping programs is money. Besides buying new software, large user sites would have to shell out large amounts of cash to train users on the new programs. Incompatibilities between Microsoft files and new products could also lead to the costly and painstaking conversion of data.

For a new Mac application to succeed on a large scale, "it would have to be the same quantum leap that Excel was to 1-2-3," said Tim Turnpugh, executive vice-president of operations at Seafirst Bank.

Microsoft entrenched itself in the Mac applications market in 1985, a time when most other developers focused instead on DOS products. Today, the company has the three best-selling software programs on the Mac: Word leads the pack and is followed by Excel and an integrated package called Works.

Companies such as Aldus Corp. and Acius, Inc. have had their share of success in Mac market niches, but no developer has been able to grab a real piece of the pie.

One of the most sensational failures of a traditional DOS company testing the Mac waters was Lotus Development Corp.'s Jazz integrated software program. The first version was met with scant user interest, and a revamped version, called Modern Jazz, was canceled before it shipped.

Ashton-Tate also bears some scars from its first pass at the Mac. Dbase Mac has been a weak performer, shipping at a run-rate of about 50,000 units for 1988, according to Bill Higgs, director of software research at Infocorp.

Higgs characterizes such Microsoft best-sellers as Excel and Word as "moving targets" that many competitors can only hope to play catch-up with.

But Microsoft will have to keep updating its products if it hopes to face down this first major charge at its bread-and-butter applications business. Ashton-Tate, armed with a couple of hot acquisitions, and Wordperfect could begin to erode the Microsoft mountain.

Users, meanwhile, seem to look forward to more choices with a let-the-best-program-win mentality — and that program will probably carry a Microsoft label. "I'm pleased to see the competition because that means we're going to see Microsoft do more than they might have in the past to update products," Richardson said.



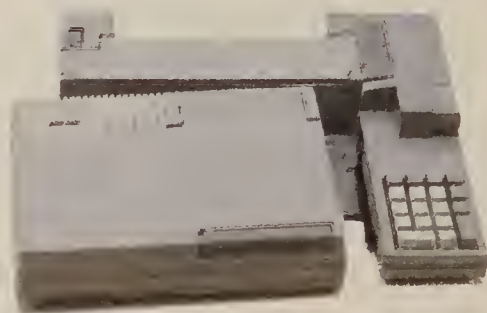
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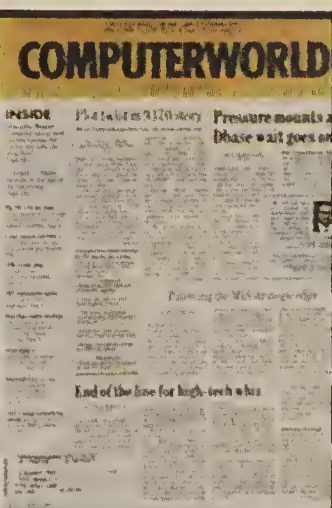
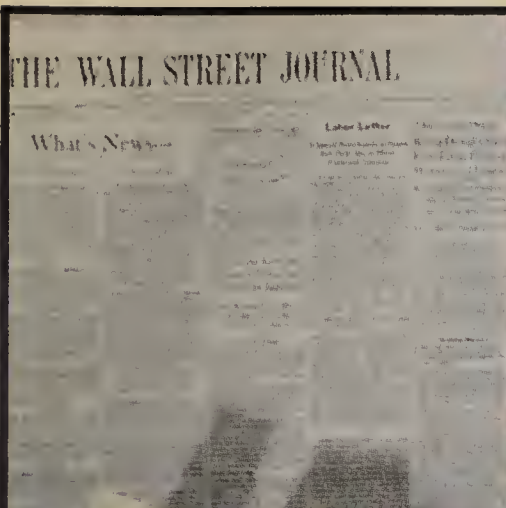
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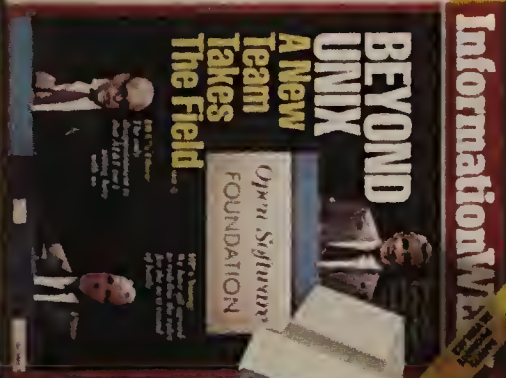
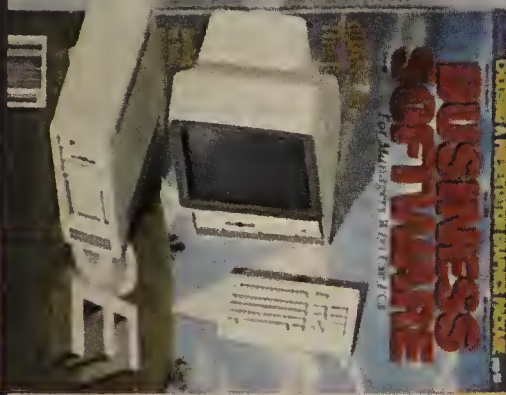
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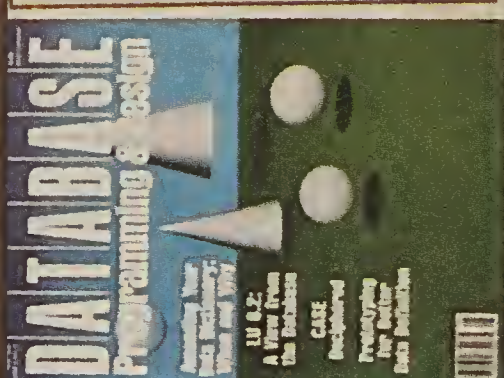
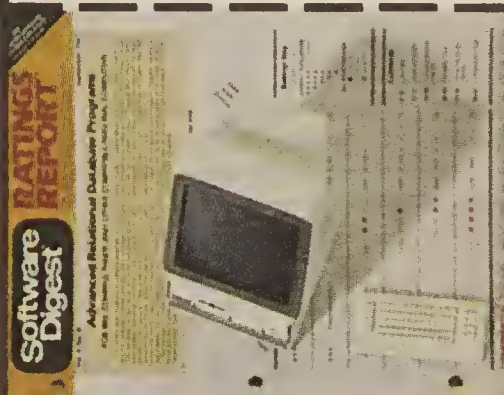
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Apple service division to covet Fortune 1,000

BY JULIE PITTA
CW STAFF

CUPERTINO, Calif. — Apple Computer, Inc. is scheduled to unveil its integrated services division, a group established to offer personal attention to high-volume corporate customers, by year's end.

Headed by Charles Berger, former vice-president of market development, the group will offer a range of services to Fortune 1,000 customers buying large numbers of Apple Macintoshes. The group will act as a consultant to those customers, offering advice on how to integrate the Mac in multivendor environments and even developing customized products such as Mac-like front ends for mainframe applications.

"The charter is to provide system integration service to large corporate accounts — anything to facilitate the integration of the Mac into large multivendor environments," said Michael Szabados, marketing and sales director for the division. "We will use existing technologies and customization to do that." He declined to offer further specifics.

Szabados said the division is the natural evolution of Apple's efforts to beef up its communications offerings during the last year. "We couldn't have done something like this a year ago," he conceded. "At that time, we didn't have the tools."

Berger and his team are still formulating the business plan for integrated services, Szabados said. The plan is expected to be approved by October. However, the division is not expected to be in high gear until the end of this year, Szabados added.

So far, Apple has assigned 20 staff members to the group, which includes a sales and marketing team and a technical group that will work with Apple's re-

search and development branch.

Szabados declined to specify how much Apple had budgeted for the integrated services division.

The group has commenced working with Apple's installed base, writing host front ends using Apple products like Hypercard, a relational database for the Mac, and Macworkstation, a software development tool that allows mainframe applications to be reworked so that the Mac maintains its user-friendly interface when connected to a host computer.

Integrated services was announced during Apple's reorganization last spring; however, no details regarding the group's

charter were offered. At that time, Allan Loren, Apple's MIS director, was assigned to establish the group, eventually turning the reins over to Berger. Last week, Loren was named president of Apple USA, one of four new operating divisions at the company. Berger continues to report to Loren.

Corporate customers said the group will provide a key component of Apple's strategy to woo Fortune 1,000 customers. "It's very logical," said Tim Turnpugh, executive vice-president of Seafirst Bank, a Bankamerica Corp. subsidiary, and manager of its operations group. "It's being done by other vendors. Providing after-sales service to customers will result in more sales from the existing base."

1-2-3 ship set for late '88; market groans

BY ALAN J. RYAN
CW STAFF

CAMBRIDGE, Mass. — Analysts said they were not surprised last week when Lotus Development Corp. announced that 1-2-3 Release 3.0 would likely ship late in the fourth quarter rather than early.

But the refocused timetable caused Wall Street forecasters to drop projected earnings for the spreadsheet king for the fourth quarter. Some said this announcement again makes room for Lotus competitors to gain market share.

Lotus stock dropped a full point to 18¼ the day after the shipping announcement last Wednesday.

Earlier this year, Lotus said the next release of 1-2-3 would ship in June, but it was unable to meet that deadline. When that announcement was made, the price of Lotus stock dropped.

According to a company spokesman, Lotus is still "working hard for a fourth-quarter ship." This caused some to speculate that the product might not be available until the first quarter of 1989 or might at best ship in limited quantities near the end of this year.

"Having the old product out instead of the new product isn't going to help them any," said Harvey C. Allison, an analyst at Wertheim Schroder & Co. "If they don't lose market share, they lose an opportunity to gain share. My forecast estimate had been expecting they would ship in October."

According to Lotus spokesman Jamie O'Donnell, "We have a talented team working intensely on Release 3, and we have made great progress over the last several months."

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McCormack & Dodge brings Millennium line to DEC's VAX

BY NELL MARGOLIS
CW STAFF

BOSTON — Spurred by spreading globalization in the business sector and the subsequent clamor for software that plays in distributed environments across multiple hardware platforms, McCormack & Dodge (M&D) is bringing its Millennium integrated application line to Digital Equipment Corp. VAX computers.

The first Millennium application for

the VAX will be general ledger, "the hub application . . . around which all other applications reside," said M&D Vice-President John Birch. An on-line, real-time package able to process financial, accounting and statistical data for multiple corporations, GL:Millennium offers the full slate of Millennium features.

However, Birch said, it is also tailored to take advantage of DEC's VMS operating system capabilities, such as the RMS file-management system and SMF

screen-handling facilities.

Available in November in both 4.7 and 5.0 VMS versions, GL:Millennium will be priced at \$100,000.

"We were always envious of IBM [users] having Millennium," said Ian Messenger, an MIS manager at Lotus, UK, a GL:Millennium beta-test site. A VAX shop with "a very strong distribution and networking philosophy" governing everyone "from the 2,000 to 3,000 users within the company headquarters to two people out in a remote distributorship," Lotus, UK is "constantly dealing with very tight reporting deadlines in a very quickly moving business," Messenger noted. "We jumped at the chance to have Millennium on the VAX."

Last week's move does not mark

M&D's debut on the VAX platform; present in the DEC world for the past eight years with its Plus series of financial applications, the company is, in fact, a DEC cooperative marketing partner. However, the porting of the blue-ribbon Millennium line is being seen in many quarters as validation of DEC's recent success in the commercial market.

In his opening address at the users group meeting that served as the forum for last week's announcement, Chief Executive Officer Frank Dodge appeared determined to reassure M&D's traditional customer base that the move toward DEC signals no defection. He peppered his company forecast with references to IBM's DB2, Systems Application Architecture and Application System/400.

AT&T releases merged version of Unix, Xenix

BY JULIE PITTA
CW STAFF

MORRISTOWN, N.J. — AT&T reached the first milestone last week in its controversial efforts to create a single standard for its Unix operating system, releasing a version that merges AT&T's Unix System V, Release 3.0 and Microsoft Corp.'s Xenix operating system.

Called Unix System V/386, Release 3.2, the version was designed for systems based on Intel Corp.'s 80386 microprocessor. AT&T said it will license the Unix trademark for the first time to licensees who distribute this version of Unix. In the past, licensees have had to create their own names when referring to Unix.

System V/386, Release 3.2 unites two of the "major deviants" in the Unix arena, an AT&T spokesman said. "There are three major deviants in the world of Unix: Xenix, System V and the Sun operating system," he said. "It's major in that it brings us closer to a single standard for Unix."

In February 1987, Vittorio Cassoni, then president of AT&T's Data Systems Group, and Microsoft Chairman Bill Gates announced that the two companies would work together to merge Unix and Xenix.

Currently, AT&T is working with workstation vendor Sun Microsystems, Inc. to combine System V, Xenix and the Sun operating system, which is based on the University of California at Berkeley Version 4.2 derivative, into one operating system.

The spokesman said the development team, composed of AT&T and Sun engineers, is on schedule to deliver a Unix System V, Release 4.0 by mid-1989.

The Sun and AT&T alliance has been challenged by a consortium of powerful computer vendors, including IBM, Hewlett-Packard Co. and Digital Equipment Corp., which have formed the Open Software Foundation (OSF), a nonprofit company. The OSF is planning its own version of Unix to counter System V, Release 4.0.

The OSF has said that AT&T's Sun partnership offers the latter company, a leading workstation vendor, an unfair advantage in the Unix market.

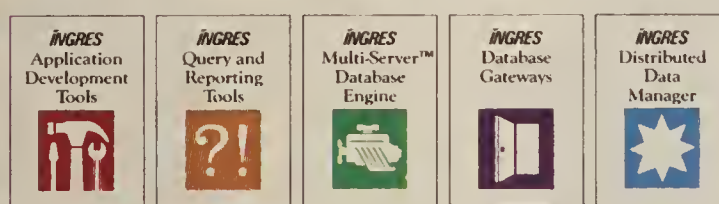
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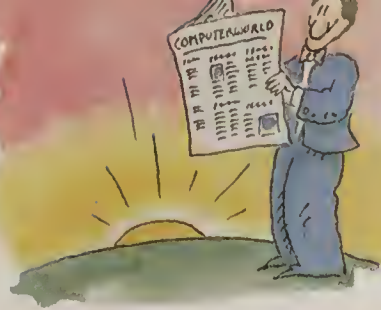
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Coming MIS salaries reflect 1988; Westerners make out

TREVOSE, Pa. — MIS personnel who were happy with the raises they received at the start of 1988 should remain content when 1989 rolls in. Those people who did not like their 1988 pay hikes had better get ready for bad news.

Companies that gave average 1988 raises of 5.1% for exempt workers and 4.9% for nonexempt workers plan to match those raises in 1989 with hikes of 5.2% and 4.9% respectively, according to a survey administered by the Administrative Management Society (AMS). The AMS questioned 2,200 companies on salary rates for several types of employees, including 20 typical data processing positions.

The top MIS salaries for 1988 are drawn by DP managers — who earn an average of \$49,500 — and MIS staffs in the Western states and in utilities and

transportation companies.

According to an AMS official, the higher MIS salaries in the West and in utilities are consistent with pay patterns for non-MIS employees, reflecting a higher cost of living in the Western states and a tendency for utility companies to pay more than other industries.

AMS said utility, transportation and communications companies pay management-level workers an average of \$48,300, professionals such as programmer/analysts \$34,500 and staff workers such as computer operators and data entry operators \$21,200.

Companies in the service sector paid the lowest management-level salaries at \$40,300.

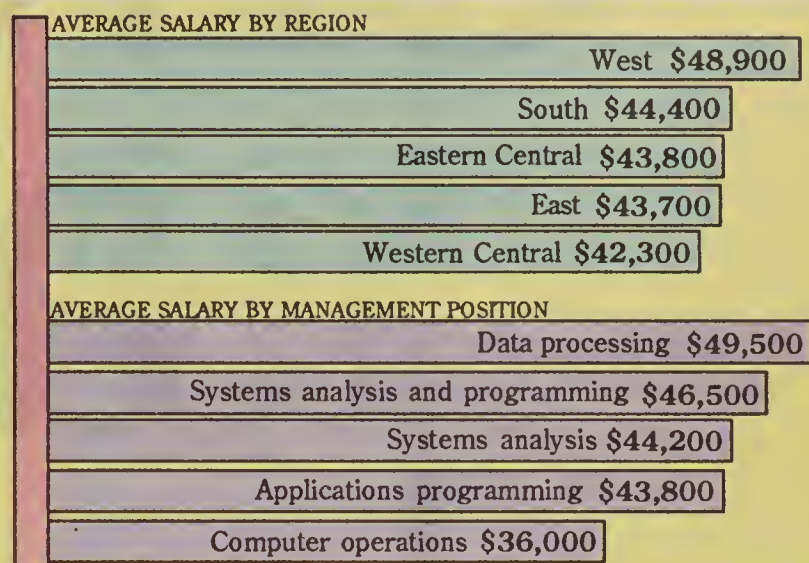
Managers in the West averaged \$48,900. The lowest regional averages are earned in the Plains states.

On average, the five classes of management-level employees garnered \$44,000 nationwide while nine classes of professionals averaged \$31,800 and six types of staff workers averaged \$18,500.

DP managers in larger companies — those with more than 500 employees — are earning average salaries of \$55,300, which is \$10,300 more than what is earned by their peers in smaller companies. Average high salaries — those in the

Westward ho!

An Administrative Management Society survey of 2,200 companies finds significantly higher MIS management salaries in the Western region of the country



SOURCE: ADMINISTRATIVE MANAGEMENT SOCIETY
CW CHART

75th percentile — ranged from \$52,500 in small companies to \$63,500 in large companies for DP managers.

Big packet switches have tough row to hoe

BY KATHY CHIN LEONG
CW STAFF

Come January, colossal packet switches from Tymnet, McDonnell Douglas Network Systems Co. and Telenet Communications Corp. might find themselves all dressed up with no place to go.

Tagged as the Crays of the networking world, these next-generation switches boasting incomprehensible power and speed are facing market barriers even before they ship.

For one thing, the drop in circuit-switching T1 line costs poses an attractive alternative for cost-conscious users. And for another, market observers are skeptical that users will need such capacity and lightning speed.

"The private packet network sales are not growing as expected," charged consultant Gary Audin, president of Delphi Associates in Pompton Lakes, N.J. "Vendors had to do something to stimulate the market."

International Resource Development's Ken Bosomworth concurred, estimating that packet-switch sales will peak in 1992 at \$800 million and slowly taper off, due to competition from T1 and future Integrated Services Digital Network (ISDN) technologies.

Final stages

As promised, the humongous switches from San Jose, Calif.-based Tymnet and Reston, Va.-based Telenet announced at the Geneva Telecom '87 show are entering beta testing and will ship in volume by early 1989.

Both companies acknowledged that they have spent the last three years laboring over the products and said the acceptance of megaswitches will be very important to their strategies during the next several years.

They would not disclose how many research and development dollars have been invested, but analysts such as Bosomworth estimated that it typically costs packet vendors \$2 million in design costs to come up with a solid switch. "Then again, many companies spend far more

money than they have to," Bosomworth said. "Some spend as much as \$40 million."

The two packet-switching titans maintained that they are responding to user demand and will ship to beta-test sites within the next two months. Telenet has a switch on order for the Norwegian Telecommunications Authority, and Tymnet officials said several customers have tentative agreements.

However, several networking consultants interviewed said none of their Fortune 1,000 clients have ever expressed a need for the giant switches.

Telenet's TP4/III is a 32-bit switch that will support up to 8,000 packets per second — four times as fast as its current offering, the TP4/II. The switch family, available in up to five models, will offer from 200 to 3,200 ports, the supplier said.

The engine from Tymnet is similar. The 32-bit Turbo Engine can handle transmission speeds of up to 7,000 packets and will support 256 ports. Like the Telenet switch, it will eventually support local-area networks, T1 and T3 transmission schemes and ISDN.

So what?

Yet private packet users are ho-hum about the announcements. One Tymnet customer said, "When we all saw this at the last user group meeting, my first thought was, 'What took you so long?' We users have been around for a long time. It would take a lot to get us excited about any product."

Many users said they are not comfortable with the product strategy. According to Doug Taylor, a Hughes Aircraft Co. network manager, the Tymnet and Telenet products promote a centralized packet approach, which is not favored at Hughes.

Hughes, which boasts of being the first private packet network user in the country, operates a domestic decentralized network of 18 Telenet 4000 switches.

"I'm concerned that if you put so much traffic on one switch, you are liable to have large failures," Taylor said. "You

can leave yourself very vulnerable. There are trade-offs, because you would have less to maintain. This is a natural fit for centralized environments."

Bigger may not always be better. One Telenet user at United Technology Corp. in Hartford, Conn., said the product sounds like a good one but added, "I'm not sure what the market is for that. As far as I'm concerned, that's just too much power for us."

Analysts expressed similar sentiments. "There are only so many big networking contracts that are left out there," observed International Data Corp. analyst Kathryn Korostoff. She added that there are few installations in the U.S. that demand that kind of throughput.

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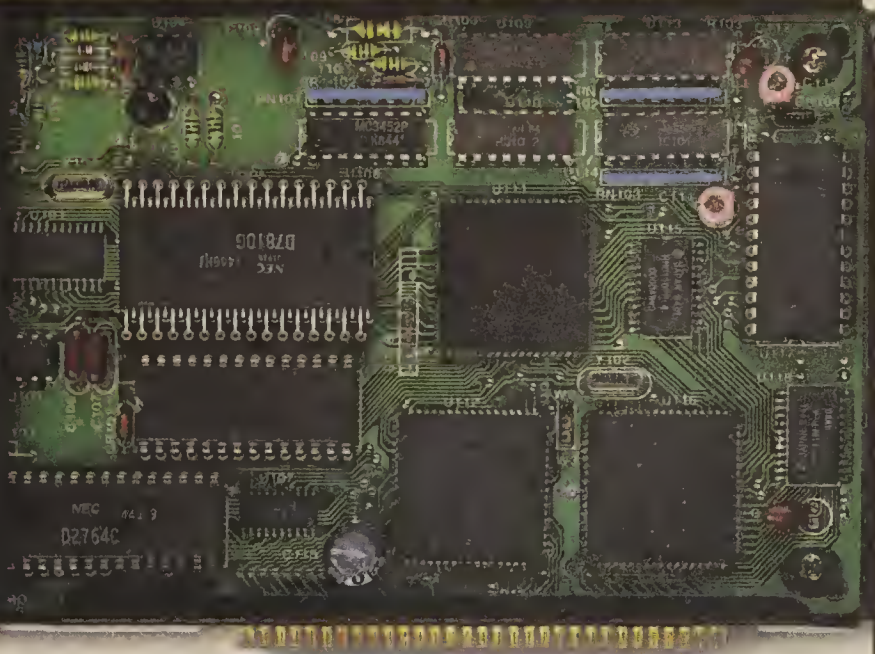
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EDITORIAL

Risky business

IS MIS MANAGEMENT hazardous to your career?

That sounds like an ominous question in this age of information, but evidence is mounting that MIS execs are finding that success increasingly places their careers on the line.

The most striking evidence comes from a recent Touche Ross study of 346 chief information officers. Asked why their predecessors left their positions, one-third of the executives cited dismissal or demotion. Another 30% pointed to a lateral move or retirement. That left only 36% of the executives, who, we can presume, left their positions for bigger and better things.

Then there is the more circumstantial data. Among the well-known MIS figures who have left their jobs in the past year are The Travelers' Joseph Brophy, Bankamerica's Louis Mertes, Gillette's Kevin Moody, Fidelity's Michael Simmons, American Express' Kailash Khanna and Sun Co.'s Dudley Cooke. Some left under pressure, having failed to gain the support of upper management. These weren't just high-level managers; they were among the most visible and vocal members of the industry.

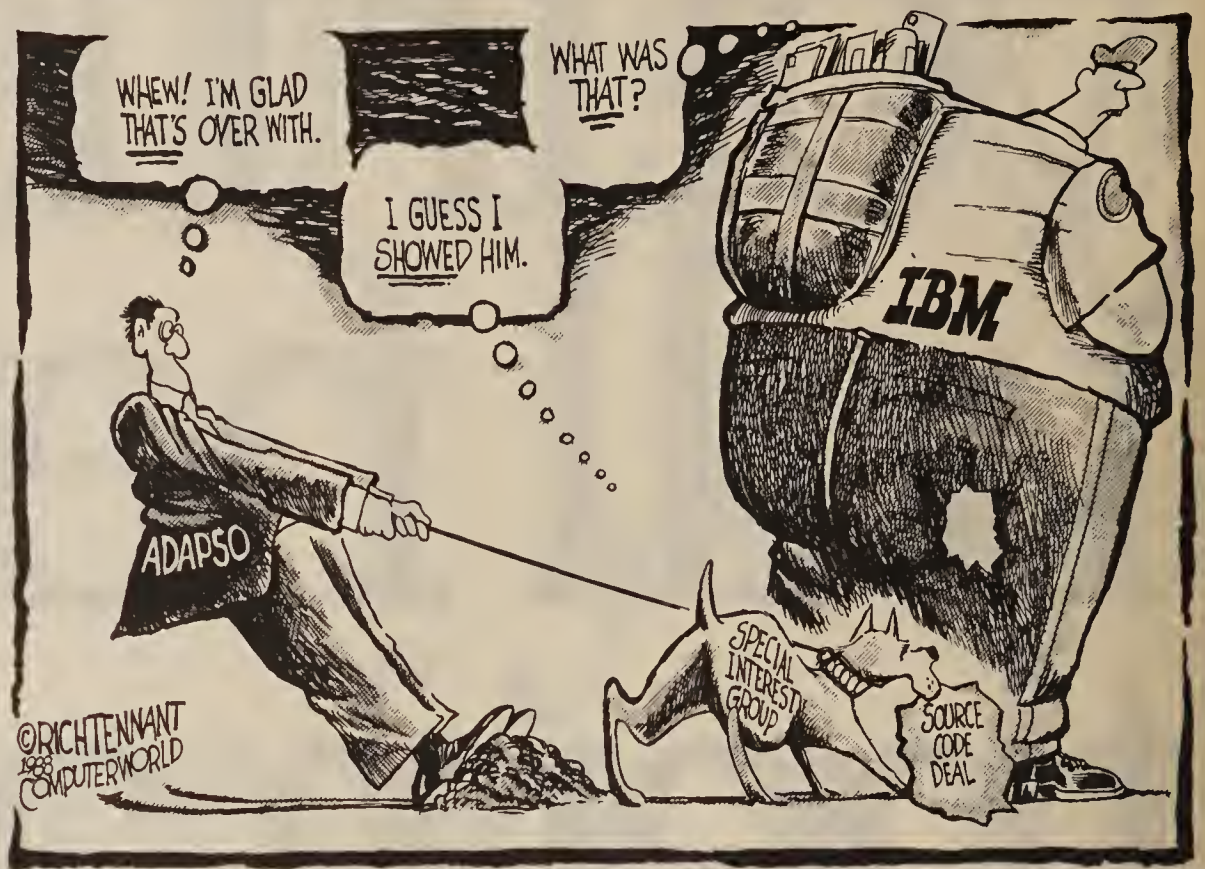
What's going on here? The answer may lie in another part of the report. The study found that the percentage of MIS organizations that report directly to chief executive officers increased to 34% in 1987 from 26% in 1986. And in information-dependent industries like insurance and financial services, the figures are considerably higher, approaching 70% in some cases.

Clearly, information systems is moving into the forefront of the corporate planning process. The function has become too important to be shunted aside and left to low-level technicians. MIS directors today are expected to plan and participate in their companies' most crucial corporate strategies. And they're being held responsible as never before for the success of those strategies. Bankamerica would not have poured \$80 million into its failed Masternet institutional trust accounting system if it did not believe the project was crucial to the company.

It would be natural to react with alarm to a trend like this. But senior-level MIS executives should avoid the urge to duck and cover. The profession's new volatility is a testimony to its arrival in the mainstream of the corporate boardroom, with all the rewards and sacrifices that involves. Why shouldn't MIS executives take the same risks implementing a global communications project that marketing vice-presidents take with a new sales strategy or manufacturing executives take with a bold new factory design?

But by the same token, MIS should be entitled to reap the rewards of its strategic successes. We hope the day is fast approaching when MIS directors will be considered for corporate leadership in the same light as their counterparts in sales or finance.

In the meantime, we accept the current turmoil in high-level MIS circles with mixed emotions. The climb to the top is fraught with risk, but the view is great once you're up there.



LETTERS TO THE EDITOR

See for yourself

The only issue of dubious morality concerning your editorial [CW, June 20] is the call you make to computer companies to either withdraw from South Africa or stay and be accused of supporting a government whose policies are "indefensible." The questions that must be asked are: How much do you actually know about the situation in South Africa? And whose "call for help" are you responding to?

As a South African, I find it abhorrent that people can prejudge a situation with such disastrous consequences as you have done. I do appreciate that you can only know about the situation from your media reports. But you surely can't take action until you have satisfied yourself about the truth.

The real situation in South Africa is hidden from you and requires you to visit the country. It revolves around millions of rural people leaving their traditional homes and moving to the cities who want to participate in the excitement and progress offered by modern society. They speak different languages and are illiterate and unskilled. They want education, employment and the promise of a fulfilling future. The answer to this complex problem lies in education and economic growth.

We in the computer industry in South Africa have prided ourselves in being the providers of the technology to support mass education and rapid skills development. American companies like IBM and others have been at the forefront doing real work to alleviate real problems and assist with real solutions.

Since when has "a distant call for help from a scarred land and

scarred people" been effectively met with rejection and withdrawal, as you're suggesting? What moral defensibility is there in that? And how can you ask your readers to participate in such moral sterility?

Lewis Folb
Managing Director
Systems Programming, Ltd.
Paulshof, South Africa

No easy answers

In your editorial "Morals over \$\$\$" [CW, June 20], you talk about an "overtly racist and oppressive country." I beg the question: On what evidence do you condemn us? Evidence that will be hard to find in this country. Nearly two million blacks annually cross our borders from neighboring countries in search of jobs. You only have to walk the streets of any city or town and talk to the people of all colors, races or religions to realize how far your statement is from the truth.

We have made many mistakes in the past, and many people have been hurt in search of an answer to a very complex problem. We have a richness of diversity that is the essence of individuality that we need to preserve. There is no simple answer nor quick solution to the problems of this land. The process of reform will continue, and a solution will evolve as people learn to trust each other and work together.

Your appeal to any group — individuals, cities, companies or entire nations — to answer a distant call for help from a scarred land and a scarred people is ill-conceived and hollow. They are far from being scarred and are very capable of looking after their own interests.

Your endorsements and coer-

cive support for sanctions against South Africa is therefore irresponsible and selfish. Sanctions can only help set back the process of reform, and the very people that you propose to help in a distant land will not thank you for depriving them of the opportunities to better themselves.

Pieter Naude
Bryanston, South Africa

A bum rap

I would like to clarify an item in an otherwise fine article, "A DBMS for the masses" [CW, June 27], on Borland International's Paradox.

I am quoted as saying that after keeping Paradox up for 72 hours, the system shut off and Yoplait lost 27M bytes of hard disk storage. The implication is that Paradox caused a data loss, which was definitely not the case. A faulty battery backup unit caused voltage spikes that led to the loss of the data.

Our Paradox-based system has been running without a single error since it was installed more than two months ago.

I was also quoted as saying it takes less than six hours to fully train a user on Paradox. The more accurate number is 2½ hours for training crane operators in the use of the application.

Wayne Clive
Manager of Operations Control
Yoplait USA
Carson, Calif.

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701.

Computers take rap for bad data

Before you ask the question, make sure it's capable of being answered

THOMAS WHITMORE

The most common cry heard around databases is, "The computer screwed up." The answer didn't work? Blame the computer.

But in many cases, of course, it is not the computer's fault or even the programmer's.

Before an MIS manager asks a question, he should make sure the data can give the answer, which is entirely dependent on what the data is.

Everyone knows what data is. That's probably why nobody bothered to define the term in most statistics textbooks published between 1950 and 1980. If you look in technical dictionaries, you will generally find data described as "the numbers used in analysis" or something similar.

But is data really just numbers? And if not, what is it? And what difference does the definition make in the real world anyway?

A moment's thought and a few examples will make it clear that pretending data is just num-

bers leads rapidly to chaos.

Trying to add apples and oranges is usually not going to tell you much about either one, despite what it may tell you about mixed fruit.

On a subtler level, comparing statistics generated by two different government agencies for their own purposes can be just as bad.

Back in 1978, there was a lot of interest in oil imports. The headlines pointed out wide differences between the U.S. Bureau of the Census and the Department of Energy figures on the month's imports of petroleum into the U.S.

It turned out that the numbers differed so much because of the differing definitions of some key terms. Once the definitions were corrected, the two figures differed by only half a percent.

The terms involved? "Petroleum," "the U.S." and "month!"

It's not difficult to see how agencies could differently define "petroleum;" for instance, whether or not it included refined products.

The discrepancy in the use of "the U.S." is also rather simple to explain; for instance, whether U.S. possessions include Puerto Rico and the Virgin Islands.

What seems hard to understand is how the two agencies could use different definitions of

"month," a term most people would never even bother to check.

The Census Bureau, whose task was to report on foreign trade rapidly and comprehensively, adds up all reports that arrive at its processing office in Jeffersonville, Ind., between Jan. 10 and Feb. 10, for instance, as imports in the "statistical month" of January.

The DOE, on the other hand, is interested in more precisely determining the flow of oil in a given month. This department is willing to wait for months to get good information on what happened in the calendar month of January.

Different strokes

These different goals inevitably lead to different numbers. Which is right? Both are, or neither; it depends on what you want to use the data for. If you don't know what you want, you can't get it. And if you don't know what the originator of the data thought he meant, you don't know how to use the data properly.

Almost all database programs are designed with analysis in mind. Analysis is the presentation of the data to the analyst. Very few are designed with presentation to others as a possibility. This year's mnemonic is next year's inexplicable cryptogram.

If the person who did the analysis were to go away, it would be impossible to determine what the numbers mean. And that's not the fault of the data but of the analyst who didn't document his work.

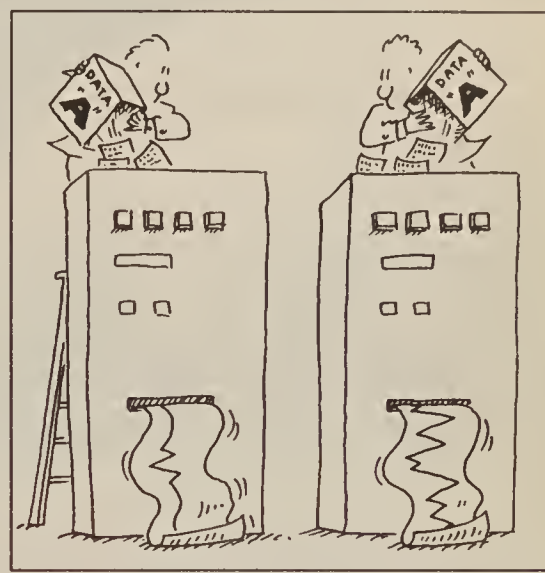
Most analysts look on documentation as something left for the end, when a new project would make it a low-enough priority that it could be forgotten.

Besides, if an analyst really documented everything he did, it could be picked apart by somebody else; statistics is an inexact science, with the path an analysis eventually takes being very dependent on the individual analyst.

But without the documentation, there's no way to make the analysis better, more robust, more comprehensible, more significant.

Which brings us back to the question, if data isn't just numbers, what is it? The Language of Data Project, a basic research project funded by the System Development Foundation, came up with a magical sentence that should help anyone understand what data is: "A datum is a record of an observation on matter and how it changes in space and time."

Thus, for any data, one needs to know the observer's point of



CHRIS DEMAREST

view, the matter observed, the change or function it went through, the space and time involved and the aspect of reality that was measured, which is usually expressed in the units of measurement. Knowing all those dimensions allows anyone to proceed to analyze the data involved.

Do they seem familiar? They should; they're directly analogous to the who, what, when, where, how and why that all good reporters try to fit into their newspaper stories.

If any one is missing, the data becomes much more difficult to use properly. With a checklist that asks for these pieces of information, an MIS manager can make the company data more useful and more responsive and can even sometimes tell when the questions asked aren't answerable.

AT&T looks for common ground, not war, with OSF

ROBERT KAVNER



During my first four months as president of AT&T's Data Systems Group, I often felt like a lead in a great

Unix soap opera. So much of the industry's media attention has focused on a so-called "battle" between AT&T and the Open Software Foundation (OSF) over the operating system.

In spite of what you may have read, AT&T is not looking to war with the OSF. AT&T believes in preserving a single Unix System standard, and we are talking with the OSF to try to establish a common ground for development.

However, we cannot allow the time it takes to hold these discussions to bog down Unix System growth. AT&T has hundreds of Unix System licensees to serve, and we are committed to providing them with the best

possible product and development environment so that the Unix System can realize its full potential.

Milestone to be achieved

Consider that during the past two years, shipments of systems based on Unix have increased by almost 70%. In the first quarter of 1988 alone, 85,000 systems were shipped. And by the end of this year, the one millionth system will be shipped.

If projected growth rates are maintained, the Unix System will hold a 25% share of the installed base in three years. Just five or six years ago, this level may have seemed out of reach, but today we're at the threshold.

The challenge facing us now is to maintain the momentum in the open systems movement. The accomplishments made by AT&T and our partners in recent months go a long way toward pushing Unix System growth over the top.

Portability has taken a significant step forward with the merge of Microsoft's Xenix with the Unix System V. The result

— Unix System V, Release 3.2 — is available now. Combined with our agreement with Sun Microsystems, it means that all the major Unix System derivatives — Xenix, the University of California at Berkeley Unix features and SunOS — will be merged into a single standard when Unix System V, Release 4.0 ships in 1989.

Release 4.0 will be previewed for systems developers this fall in a series of technical conferences we will be conducting around the world.

In addition, broad, commercial acceptance of the Unix System was given a shot in the arm with the introduction of the Open Look graphical user interface. It's an easy-to-use interface that will open up the Unix System to a whole new class of users. As we promised to the industry, we released the specifications for review last month.

But fulfilling product commitments isn't enough in this business. I admit we've had to learn a few lessons about working with our licensees. We've taken our knocks, but as a result, a more open and equitable development and licensing process is being put into place.

One avenue we are exploring, which we discussed at our licensee meeting in Denver, is forming

a new division to manage all aspects of Unix System development, marketing and licensing — a division entirely separate from our hardware business.

We believe, and many of our licensees agree, that it's one way of assuring a level Unix System playing field and eliminating concerns about AT&T's, Sun's or any other Unix system licensee's hardware business gaining a market advantage through early access to Unix System V specifications.

In any event, we anticipate the establishment of an independent advisory board that will offer counsel on development and licensing issues. Tapping this objective industry input will enable AT&T to be highly responsive to the marketplace. Furthermore, it will provide a window into AT&T's Unix System V development — which we recognize is a critical obligation to the industry.

At the Denver meeting, we also responded to concerns about Unix System V licensing terms. For example, our licensees have told us they need more flexibility in conforming to the System V Interface Definition (SVID).

Without an accepted level of interface definition, you cannot have true Unix System applica-

tion portability. The SVID is designed to assure software developers and end users that their application software will run on a variety of vendors' hardware — just as a VCR owner can be sure that any VHS tape will play on any VHS format VCR. Virtually all Unix licensees recognize the importance of the SVID, but many were uncomfortable with having their license contingent on compliance with the latest SVID version.

We're looking at a number of ways to address these concerns. Our general approach will be to offer more flexibility in SVID conformance and to let the marketplace play a greater role in determining what level of SVID is needed.

It is also important to put the SVID in perspective in relation to the OSF. The OSF has announced compliance with Posix, ANSI-C and X/Open. Put these standards together and you virtually have compliance with AT&T's SVID.

With this basis for agreement, we hope to work together with the OSF to forge a single Unix System standard. But our licensees and the industry can also be assured that AT&T remains committed to moving ahead with Unix System V development.

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SYSTEMS & SOFTWARE

SOFT TALK

Thomas O'Flaherty

IBM built barriers

First of a two-part series

Not too long ago, the world of IBM's software was very tidy. Picture it as a series of concentric circles with OS in the center, surrounded by communications software, the database management system and, finally, applications: The IBM solar system.

IBM was explicit in seeing computing as an integrated, hierarchical structure. Its assumptions were even more interesting: The solar system fits well in a production mode but not so well in development mode. Furthermore, the entire environment was viewed as essentially a steady state in which change would occur incrementally and be managed by IBM. These assumptions are consistent with the point of view of a very large, successful organization with a hardware bias.

IBM's strategy was well thought out and executed. Makers of alternate operating systems were neutralized, and competing telecommunications monitors were withdrawn. Other computer manufacturers came up with their version of Systems Network Architecture; meanwhile, DB2 wreaked havoc on Cullinet, ADR and Software AG. The strategy was

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AS/400 not enough

Study says machine will not conquer market

BY ROSEMARY HAMILTON
CW STAFF

CAMBRIDGE, Mass. — The Application System/400 is not going to be the home run IBM hoped it would be, declared Forrester Research, Inc. in a recent report on the mid-range line.

Of course, plenty of room remains in the research firm's definition of a home run. Forrester predicted a whopping 100,000 AS/400s will ship during the product line's lifetime. But those systems will move into IBM's ex-

isting System/34, 36 and 38 customer base.

Meanwhile, when IBM goes up against mid-range competitor Digital Equipment Corp. for new business in Fortune 1,000 accounts, it will strike out, the report said. The AS/400s, Forrester said, are not technologically advanced enough to be more appealing than DEC systems to that customer base.

The report is based on Forrester's initial assessment of the AS/400 line, which stemmed

Continued on page 31

Sleeker ESE solves problems

ANALYSIS

BY A. PERRY SCHWARTZ
SPECIAL TO CW

Two weeks ago, IBM announced that its flagship artificial intelligence product, Expert System Environment (ESE), has been revised to work in its mainstream data processing environments — MVS/CICS, IMS and batch.

The company's enhancements of ESE Release 1.2 included an improvement in the speed of processing, support for knowledge base modularity and

systems support.

To make these improvements, IBM stripped away most of the system support from the existing ESE consultation product, keeping only the inference engine. Then a new architecture for system integration was developed. Apart from the inference engine, much of ESE Release 1.2 was rewritten. However, current users were protected by making sure that ESE knowledge bases were upward-compatible.

New and improved

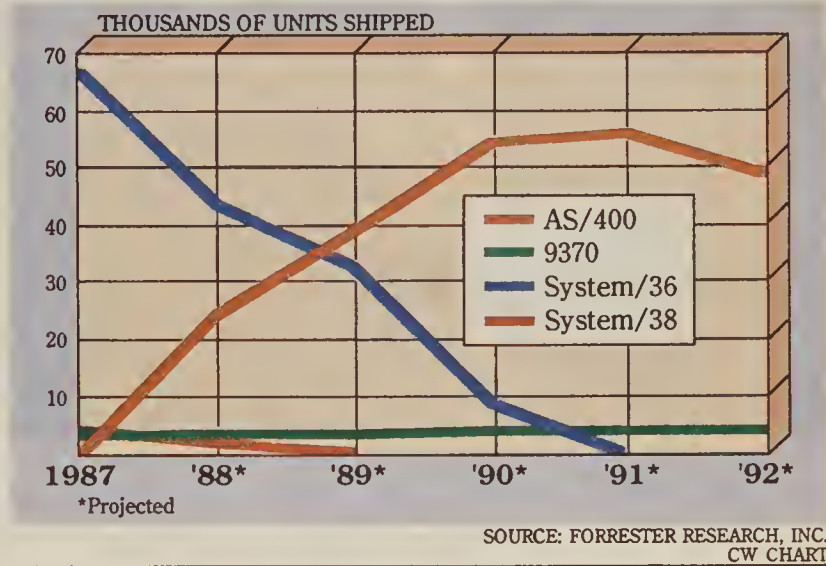
The main improvements to ESE include the application programmer interface, or API, the transaction support architecture and overall system support.

In its first releases, consultation under ESE was limited to interactive sessions under MVS/TSO and VM. With Release 1.2 of ESE, IBM has pro-

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Ups and downs

Forrester charts the downfall of the older IBM mid-range systems as the AS/400 skyrockets



HARD NOTES

Stellar jumps super price; costly memory triggers hike

Stellar Computer, Inc. increased the price of its GS1000 Graphics Supercomputer by 7% late last month. Stellar, which introduced the system in March, explained the price hike this way: A large number of orders have come in requiring systems with maximum memory of 128M bytes.

The more costly large memory configurations, combined with semiconductor price increases Stellar has experienced, have forced the company to increase the system price. A GS1000 with 16M bytes of main memory, 1M byte of cache, a 380M-byte disk drive and several graphics features now lists for \$104,900.

Harris Corp.'s Computer Systems Division won a contract with the UK's Royal Navy for the Comprehensive Logistics Automated Support Program. Harris will provide its HCX Unix-based superminicomputer.

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- Liquor Barn drinks to MIS' health. Page 25.
- Data General eschews OSF, marches to own tune. Page 25.
- Relational Technology enters CASE fray. Page 25.
- Gimpel Software breaks out C facility. Page 32.

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*"Taiwan's down again.
Somehow this is going to be my fault."*

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Marching to a different tune, DG sidesteps OSF

BY ROSEMARY HAMILTON
CW STAFF

WESTBORO, Mass. — Data General Corp. last week began shipping an upgraded release of its Unix operating system, DG/UX, which it said incorporates new mainstream data processing capabilities.

The announcement comes at a time when most systems vendors are either jumping on the Open Software Foundation (OSF) bandwagon or making strong declarations for standards. DG, it seems, is marching to the tune of a different drummer — at least for the near future.

David Ellenberger, director of systems product marketing at DG, said the company will move toward whichever Unix — the OSF implementation or the AT&T existing operating system — is eventually established as the industry standard.

In the meantime, the company is intent on putting its own

imprint on its Unix offering to make it more appealing to DP professionals.

Revision 4 of DG/UX is said to support a symmetric multiprocessor environment, such as the DG MV 20000 Model 2, which is a dual-processor system. The operating system has also received a new file system that beefs up the system's recovery features and provides for higher capacity storage, Ellenberger said.

DG/UX is based on the AT&T Unix System V, Release 3 and incorporates proprietary DG technology. Ellenberger said Revision 4 is consistent with the IEEE Posix draft specifications. He also said DG will modify the operating system to be fully Posix compliant when IEEE releases the official Posix specifications.

By following the Posix specifications, DG should be able to adapt to whichever Unix emerges as the industry stan-

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Liquor Barn taps technology

Facing service cutoff, firm creates MIS department, buys Tandem system

BY J. A. SAVAGE
CW STAFF

SAN LEANDRO, Calif. — Computer services at the newly acquired Liquor Barn went from zero to 60 — make that 55 — in six months.

A retail business spin-off from the huge West Coast grocery chain, Safeway Stores, Inc., Liquor Barn could tap into the former parent company's computer systems for only a few months after the sale.

The retail chain, specializing in warehouse-size stores stocked with thousands of different wines, hundreds of beer labels and enough liquor to serve a cocktail party the size of Oklahoma, inherited little more than the bottles and buildings from Safeway.

According to Jim Hay, chief information officer at Liquor Barn, when the sale was completed last October, there was no distributed processing, inventory control, mechanical cash registers or any MIS staff.

Hay was budgeted \$5 million to get the systems running. He was given one caveat: His new parent company, Majestic Wine Corp., did not want him to purchase a mainframe because it did not want to staff a mainframe shop.

Hay "heavily" considered an IBM System/38 but decided it was rapidly becoming obsolete.

By April, a Tandem Computer, Inc. Nonstop EXT10 system with packaged retail and accounting software was on line, along with seven MIS staffers. By July,

four stores per week — out of a total of 100 — were being brought on-line with IBM's 4680 Store System point-of-sale machines.

Because of the lack of time and staff, Hay wanted packaged

applications. "This is a tough area in business. We were hoping to use packages, but the business is unique enough that the



THOMAS PAYNE

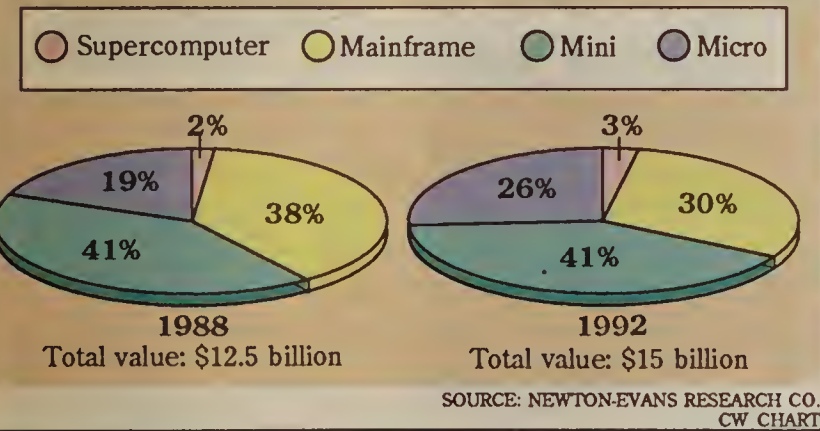
packages won't work." Thus, he relied on Tandem and its agents to do the modifications.

While Tandem is known for its fault-tolerant feature, that

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Data View

Spending patterns shift for packaged software
U.S. buyers are expected to expend a larger share of their budgets on micro packages and a smaller share on mainframe software



SOFT NOTES

Allied firms to strengthen their CASE

The computer-aided software engineering (CASE) market has a new player: Relational Technology, Inc., maker of the relational database management system Ingres. Relational Technology has linked up with Cadre Technologies, Inc., a Providence, R.I., company that sells

the Cadre line of CASE tools. Relational said the companies will integrate the Relational relational DBMS and fourth-generation language tools with the Cadre line. The companies plan a phased introduction of the jointly developed products. The first phase, scheduled for the first quarter of 1989, will result in the integration of Cadre's information modeling tool with the Ingres data dictionary.

Cullinet Software, Inc. has joined the Transaction Processing Performance Council. The Westwood, Mass.-based firm joins Tandem Computers, Inc.,

Digital Equipment Corp. and fellow database maker Sybase, Inc., among others, to cast its lot with the newly launched council, which aims to lower the confusion level in the on-line transaction processing area by developing standard benchmarks.

A symmetric multiprocessing version of the MUMPS programming language will be offered by Pyramid Technology Corp. later this year. Pyramid recently signed a deal with Micronetics Design Corp., which developed the MUMPS implementation.

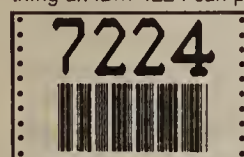
Continued on page 26

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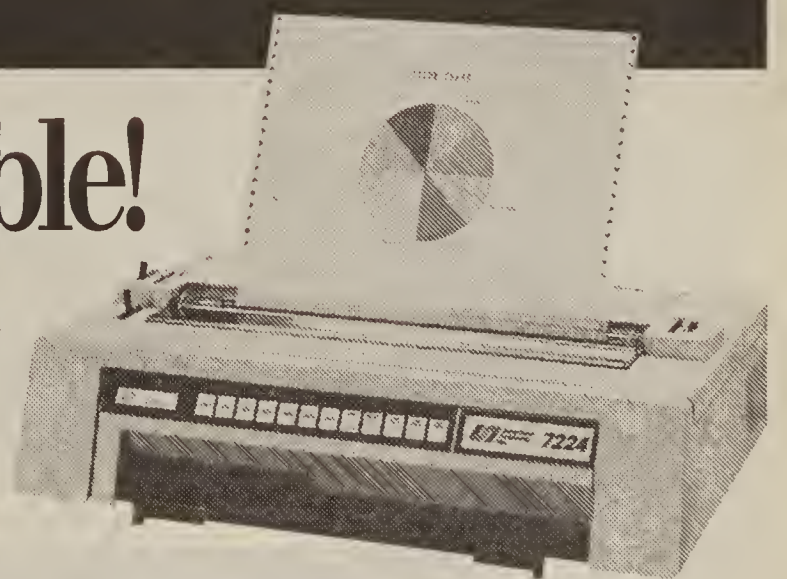
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Soft notes

FROM PAGE 25

The Pyramid offering, which will run on its Unix-based system, is said to be compliant with MUMPS, a programming language with a built-in database management system.

Applied Communications,

Inc. said two of its banking applications will be marketed by IBM for the IBM System/88 fault-tolerant computer systems. Base24-ATM is an electronic funds transfer processing system, and Base24-POS is a management system for automated teller machine networks.

Applied Communications is a subsidiary of US West, Inc., a regional Bell holding company.

BRS/Search Software, a text-retrieval offering from **BRS Information Technologies** in Latham, N.Y., is now available on the Cray Research, Inc. Cray Supercomputer. Originally developed for the IBM mainframe platform, BRS/Search Software has recently been ported to a variety of mini-computer and workstation platforms.

Netron, Inc. said its Cobol source code, a software engineering system produced by the Netron/CAP Development Center, is compatible with the Micro Focus Ltd. Cobol/2 compiler. The Micro Focus compiler conforms to the ANSI Cobol 85 specification.

Inference Corp. said it will be offering a version of its expert

system development tool on the IBM mainframe and Personal Computer platforms. The Automated Reasoning Tool for Information Management is targeted at commercial users.

Earlier releases of the Automated Reasoning Tool will continue to be available on engineering workstation platforms.

Put your programmers to the test. The software development division of **Bookman Consulting, Inc.** is offering what it said are expert system-based programs that can test a programmer's knowledge of particular programs. The latest batch of tests are on IBM's JCL, VS/370 Assembler Language Program, the PC Macro Assembler and PC-DOS.

The programs were designed to assist managers in hiring programmers and help determine an individual's knowledge in a particular area. Prices start at \$349 per month.

Suncoast Schools Federal Credit Union licensed the **Sanchez Computer Associates, Inc.** Profile/FMS financial management system recently. The banking software runs on the DEC platform.

VMark Software, Inc. said it will offer an electronic tutorial for Universe, its application development and execution environment for Unix-based systems.

Prof, the Universe tutorial, was designed by Crescendo Associates, Inc. and will be sold by this Redmond, Mich.-based company. The tutorial will cost \$795 per CPU.

DG

FROM PAGE 25

dard, Ellenberger claimed. Since both AT&T and OSF have committed to Posix, DG can tailor its offering to comply with either one.

"From a development point of view, it will require some work, but we've designed Revision 4 to be modified, and it's consistent with the Posix draft," Ellenberger said.

Revision 4's new file system is a departure from many Unix implementations, Ellenberger said. The file system will appeal to mainstream data processing professionals because it lifts the storage restriction associated with traditional Unix.

The file system allows a user to define logical disks and thereby expand the storage space. Traditional Unix allows users to define only the actual physical disk space.

The latest DG/UX carries a license fee of \$11,000, a company spokesman said. Users of DG's current Unix implementation can upgrade at no extra charge.

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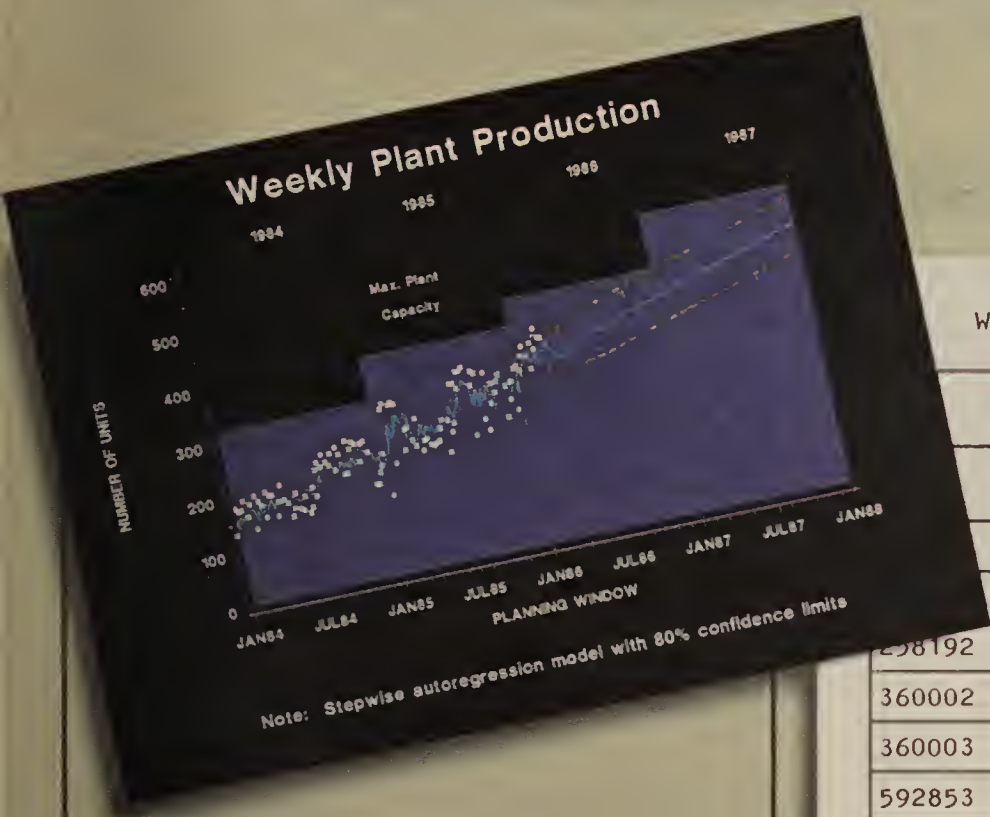
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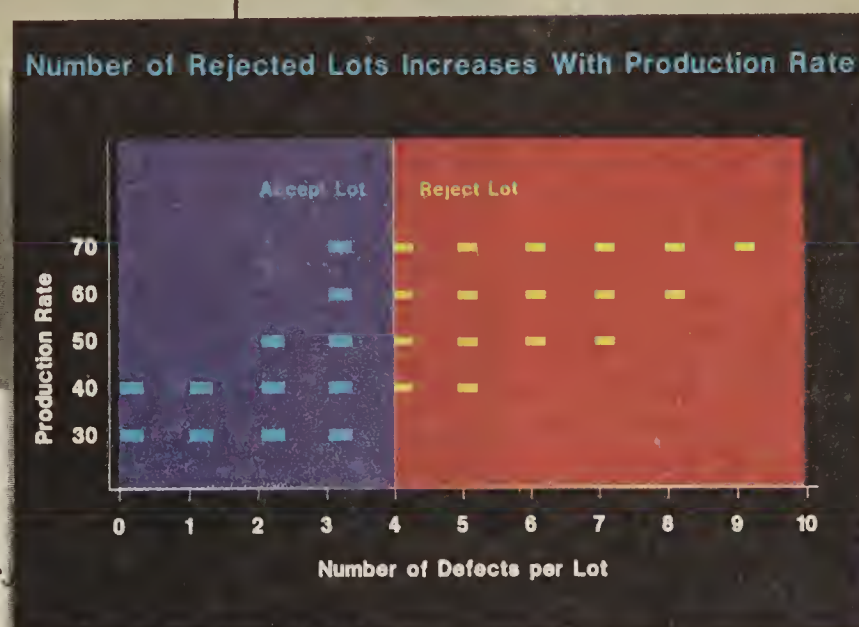
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40	6	1	6	3.5	33
50	6	3	8	5.5	66
60	6	4	9	6.5	83
70	7	4	10	7.0	85

O'Flaherty

FROM PAGE 23

part of a larger plan to greatly increase the software and services portion of IBM's revenue and make the giant a \$100 billion company by 1995.

But something happened: Profits peaked in 1985, and sales grew only 8% in the next two years. Perhaps the software strategy worked too well, rooting IBM in the 1970s and making it difficult to adjust to current requirements.

Fifteen years ago, the database management concept had the allure that computer-aided software engineering (CASE) has today. We have learned through hard experience that while a DBMS is necessary to develop and maintain many applications, the price paid is complexity and long, costly development cycles. Even technically superior DB2 is like an aircraft carrier with no fleet.

We have to somehow find a way to build the applications that will ultimately be supported by a DBMS. IBM now has little to offer in this area; Cross System Product is, at best, a partial CASE tool, and SQL may end up helping other vendors more than IBM or its customers.

DB2 needs a suite of applications-enabling software — that is, dictionary, application development and maintenance tools, performance management tools and a variety of access facilities.

IBM needs help developing these aids. But IBM now owns its targeted software universe so completely that other vendors find it risky — in a technical as well as a financial sense — to develop comprehensive sets of applications-enabling products. Cullinet, for example, may have been closest to having an integrated set of tools when DB2 made that company's system software no longer fashionable.

Communications

IBM has long felt that communications software and related protocols should be absorbed into the operating system. SNA, for example, originally helped the business strategies of IBM and, to a lesser extent, its customers. But SNA assumed giant terminal networks tied to a mainframe. Now the critical need is for software that ties together dispersed applications and data.

This brings up the micro. The micro has not impinged on this analysis so far because IBM was as surprised as the rest of us when personal computers took off. OS/2 represents the beginnings of a personal computer integration strategy — six years after the original Personal Computer.

The PC has exposed some of the more obvious questions

about IBM's software strategy:

- How should applications be divided among a workstation, groups of workstations and a host?
- How should data be divided?
- When will any of this be technically and economically feasible?
- Should a host mediate between groups of PCs? How large should the host be?

IBM's misapplied software strategy may help explain its slowed growth. Vendor growth requires that customers find productive ways to use more hardware and software. IBM's own software strategy has created barriers for its customers:

- Integrated applications-enabling tools that build traditional systems are only beginning to be available — and not from

IBM. This has slowed the introduction of new applications, which is the best catalyst of IBM growth.

- No one yet knows how to incorporate islands of PCs into enterprisewide information systems. This will someday be the largest growth area of all, since the majority of installed applications will be rendered obsolete.

Barring a sudden software

breakthrough, there will be no easy solutions but rather a set of suboptimal options for reintegrating the IBM software environment.

Next week: Some of those options.

O'Flaherty is director of research for Broadview Associates, an information technology and mergers firm in Ft. Lee, N.J.

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Hard notes

FROM PAGE 23

Plexus Computers, Inc. signed a \$2.5 million value-added reseller deal with Business Systems Corporation of America for its Extended Data Processing System, an image-based system that ranges in price from \$90,000 to \$1 million. Business

Systems plans to market its Plexus-based system to 70 Blue Cross/Blue Shield companies in the U.S.

This summer marks the 20th anniversary of the first CRT-driven automated passenger reservation system in the airline industry. The system, known as **Sonic**, was jointly developed by **IBM** and **Continental Air-**

lines and first activated in the summer of 1968. The system was based on the IBM System/360 and replaced a reservation system that was based on 3-by 5-in. index cards.

Sonic was incorporated into the Shares multihost reservation system when Continental Computer Services purchased Mutual Computer Services in 1970. The Shares system is the basis

today for the reservation service provided by System One Corp. System One was formed in 1986 after Texas Air Corp. purchased Eastern Airlines and combined Eastern's automation company with CCS Automation Systems, the name under which Continental Computer Services was then operating. Currently, the Shares system processes approximately 14 million transactions per day.

Liquor Barn

FROM PAGE 25

was not on Hay's mind when he picked it out.

"We were looking at retail and financial packages, and it was difficult to find anyone with many retail [applications] on a mini," Hay said.

Additionally, he said, Tandem was willing to modify the packages on both retail and accounting, which was important to Hay because he had no staff to tackle customization.

On-line transactions were also an important part of Hay's hardware decisions. While not implemented in the short-term, Hay said that on-line credit authorization, or the use of debit cards, was a consideration. Hay is also hoping to implement on-line purchasing.

Due to the nature of his retail stock, particularly that from wineries and microbreweries that have unsophisticated invoice routines, it is a major problem to keep track of inventory.

With the point-of-sale system, Hay said he is beginning to keep track of what items are selling. Unfortunately, he can only track items with bar codes, and that represents about 80% of the stock. "The next step is to put our own codes on products," he said.

Although the Tandem system is up and running, Hay said things are not perfect with the IBM point-of-sale system. "The major problem with IBM is that they were not structured to deliver, install and train [on the point-of-sale system]," Hay said. "We had them stop and redo training to fit our people. They were trying to train on how the machines worked but not how Liquor Barn works."

Hay said he hopes to get the two systems running smoothly by mid-1989, with "full-scale accounting and payroll, point-of-sale, inventory control, on-line ordering and receiving." With a smooth-running system, he said, Liquor Barn hopes to be in the position of expanding to new stores without a big increase in overhead.

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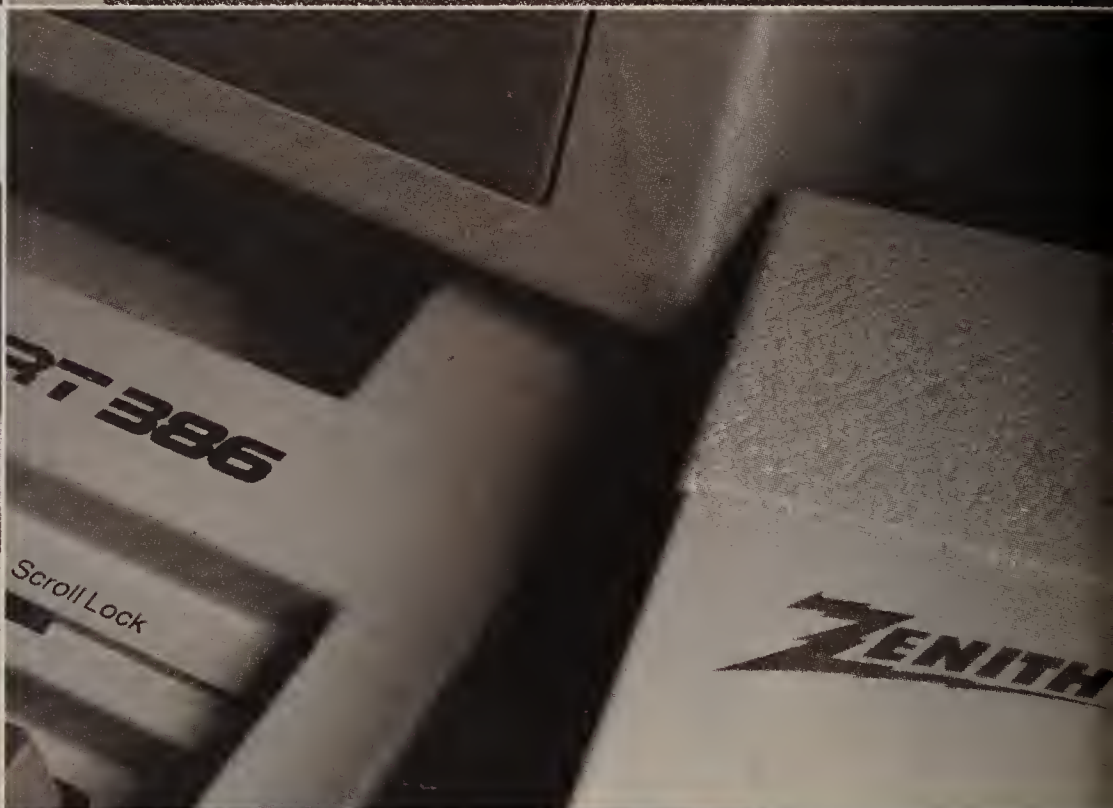
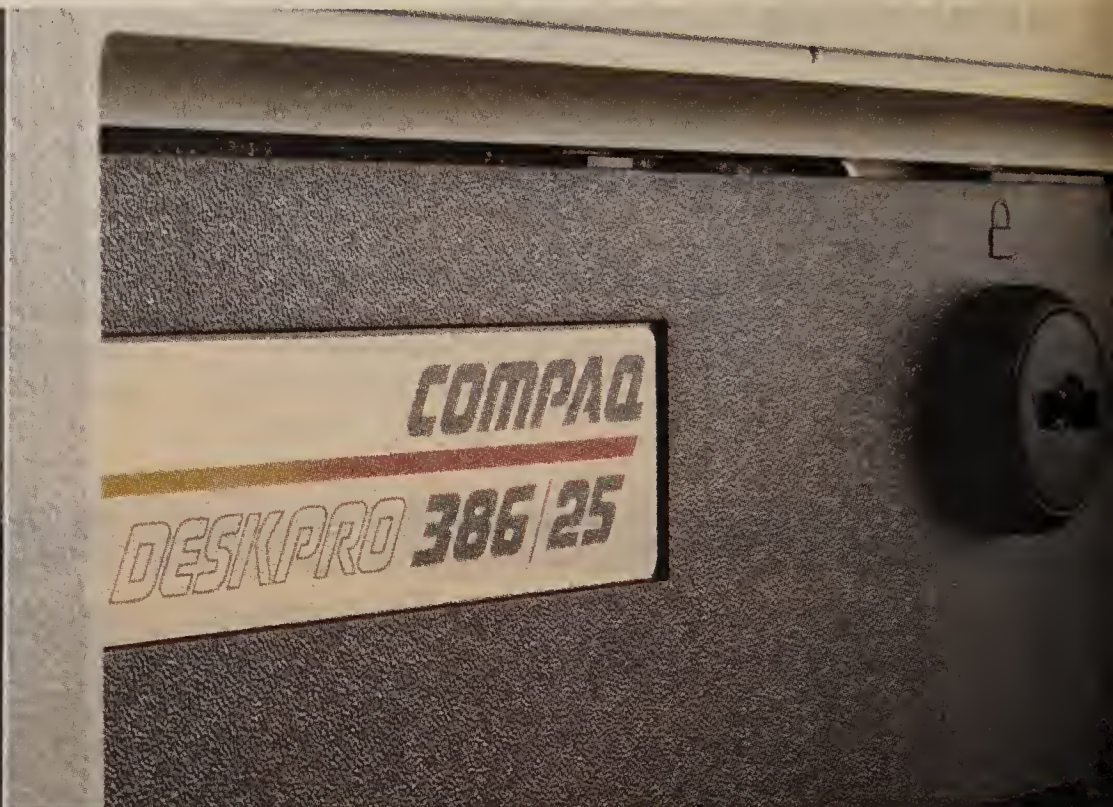
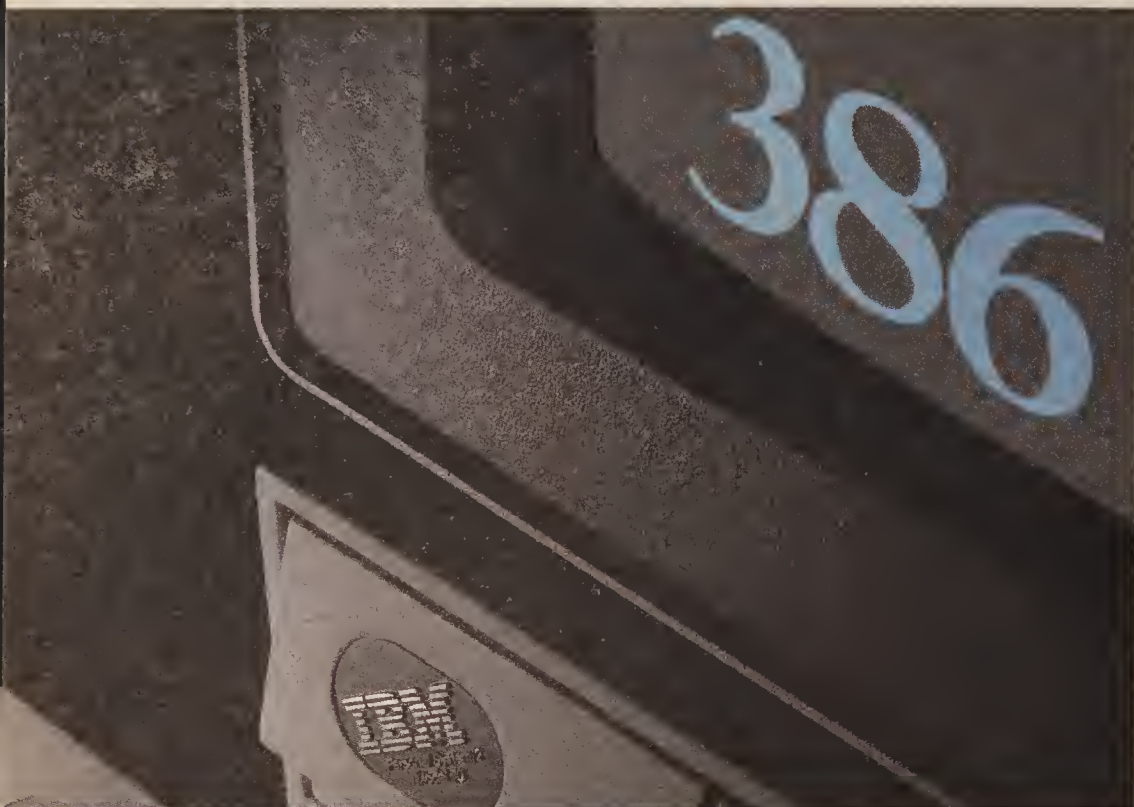
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Sleeker ESE

CONTINUED FROM PAGE 23

vided the capability for users to consult an ESE knowledge base through calls from within an IMS, CICS or batch application under MVS.

In these cases, ESE is integrated into the application by way of an ESE Application Program Interface (API).

The application program can issue any of 13 different calls to ESE through the API using standard language-interface call statements. The calling program may request ESE control functions such as initialization, consultation and return of information. Calls may also be issued for data access and trace facilities. The current status of ESE is available to the application program through the API.

Under the API architecture, ESE operates as an MVS subsystem, much like DB2 or IMS. This means that all inferencing is performed in a separate ESE region and that communication with application regions is handled through cross-memory services. DB2 calls will be initiated from the main CICS, IMS or batch region. The application program can now handle terminal I/O through standard screens in the IMS or CICS environment.

Code modified

ESE code has been modified so that it is re-entrant under MVS as well as VM, as in the older version. Re-entrance means that a single unit of code can be called independently by multiple users. This architecture allows fast and efficient call handling.

The ESE inference engine now supports 31-bit addressing or Extended Architecture. This enables ESE to handle much larger knowledge bases.

ESE Release 1.2 allows for the use of standard IMS, CICS and RACF security. Thus, user access to knowledge bases can be controlled by assigning unique IMS or CICS transaction codes so that ordinary IMS or CICS security profiles will be capable of limiting user access to specific knowledge bases.

Further support for knowledge-base modularity is found in ESE's new facility for executing one base from within another.

A number of enhancements have been made to improve the speed of ESE processing. These include such features as improved handling of storage and I/O, quicker knowledge-base loading and some streamlining of algorithms for certain inference functions. Beta users report improvements in speed from 100% to 300% for some functions.

ESE Release 1.2 will be accompanied by IBM Personal Computer support. ESE knowledge bases can now be deployed but not developed on the PC. Thus, the same knowledge base can be run in MVS/CICS, IMS, TSO and batch, VM and Microsoft Corp.'s MS-DOS.

During the past few years, as a consultant to IBM, I have had the opportunity to watch this new release of ESE being planned and developed. The enhancements in ESE Release 1.2 were overdue, but IBM has used the time wisely. The product no longer requires so many compromises on the part of data processing users.

Schwartz is president of Computer Research Associates, Inc. in Atlanta. He has been a consultant to the IBM AI project office since 1982.

AS/400

CONTINUED FROM PAGE 23

from the firm's briefings with IBM as well as informal interviews with Fortune 1,000 users and software suppliers.

Forrester pointed to what it considers six shortcomings of the AS/400:

- It lacks innovative technology. The research firm suggested that IBM could have used the system as a launching pad for some newer technologies, such as an icon-based user interface or distributed database management.

- The system does not have such advances and is essentially a melding of the older System/36 and 38 technology.

- Performance, based on millions of in-

structions per second (MIPS), is weak. The research firm estimated that the AS/400 machines' MIPS ratings range from 0.25 to 1.4.

- The SQL support is incomplete. IBM has stated that the current SQL implementation for AS/400s is a subset of SQL. As such, the IBM implementation does not have the range of functions that other SQL-compatible database management systems for competing minis have.

- The microcomputer support is outmoded technology. Its use of numbered menus looks "passe" when compared with Decwindows or Hewlett-Packard Co.'s New Wave.

- The AS/400 Office system is a repackaged version of Personal Services/36 with a few enhancements.

- New software developers will be hard to attract because of the system. One drawback, Forrester said, is the lack of a C compiler; this could shut out many developers who now write in C to port applications to multiple platforms.

With these shortcomings, the IBM AS/400 will not impact sales of DEC and HP in the mid-range, Forrester claimed. However, the AS/400 is sure to shake up IBM's own existing mid-range lineup.

As AS/400s move into existing customer sites, the System/38 will be quickly phased out, while the System/36 will linger on, Forrester said.

The System/38's quicker death will occur because it offers a smoother and easier upgrade to the AS/400 than does the System/36, the research firm noted.

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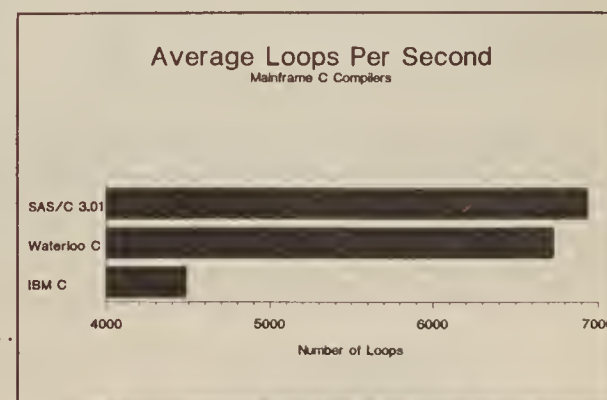
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NEW PRODUCTS — SOFTWARE

Systems software

Gimpel Software has announced **Generic Lint**, a diagnostic facility for C.

The program was designed for use on mainframes and minicomputers, including Digital Equipment Corp. VAX/VMS machines and IBM VM/CMS and MVS systems. The software will also run under the Unix operating system, the vendor said.

The product reportedly has the ability to locate bugs, glitches and inconsistencies and find inconsistent declarations, uninitialized variables, unusual expres-

sions and other irregularities.

Generic Lint is priced from \$798 and distributed on 5¼- and 3½-in. Microsoft Corp. MS-DOS formatted disks.

Gimpel Software, 3207 Hogarth Lane, Collegeville, Pa. 19426. 215-584-4261.

DBMS

A database service that offers both domestic and international historical pricing information is now available from **Interactive Data**.

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Pricing ranges from \$75,000 per year to more than \$400,000 per year, depending on product configuration.

Interactive Data, 95 Hayden Ave., Lexington, Mass. 02173. 508-863-8100.

Development tools

Cadam, Inc. has released another ver-

sion of its mainframe-based computer-aided design, engineering and manufacturing system.

Cadam Release 21 reportedly includes more than 30 enhancements and encompasses the company's line of Cimcore software products.

The Cimcore tools include programs for solids modeling, three-dimensional design, numerical control programming and finite-element modeling. Release 21 is said to contain enhancements to 3-D surface and solids modeling, 3-D mesh generation and parametric design and kinematics functions. The product also includes a proprietary interface tool that allows in-house developers to create customized applications to solve unusual problems.

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MVS Concepts & Facilities	9/27/88 Houston
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MVS Installation Workshop	10/03/88 Houston
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PROFS Installation & Implementation	10/04/88 Columbia (MD)
VSAM Workshop	10/10/88 Chicago
Network Tuning Workshop	10/10/88 Houston
IMS/VS System Fundamentals	10/10/88 New York City
VM/CMS Workshop	10/10/88 Orange (CA) 10/31/88 Columbia (MD)
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Wyse Technology, Inc. has introduced two Intel Corp. 80386-based systems designed for multiuser applications.

The **WY-3216-150T** reportedly supports up to 12 active users and incorporates a 150M-byte enhanced small device interface disk drive that features a 16-msec access time. The unit lists at \$8,599.

The **WY-3216-85T** is said to support up to eight active users. The system has an 85M-byte drive with a 23-msec access time and is available for a price of \$7,999, according to the vendor.

Both models include a 60M-byte ¼-in. cartridge tape, 1M byte of 32-bit memory and a 1.2M-byte floppy disk drive.

Wyse Technology, 3571 N. First St., San Jose, Calif. 95134. 408-433-1000.

I/O devices

Memorex Telex has introduced three matrix printers that reportedly emulate either the standard IBM 3287 or 4210 printer data stream.

Both the **1210-1** and the **1210-2** allow the operator to print cut-sheet paper while continuous forms remain in the printer. Both include a built-in rear-feed tractor to ensure smooth paper handling, the vendor said. Print speeds are 220 char./sec. in draft mode and 44 char./sec. in draft-quality mode. The units support both document-on-demand and color printing.

The 1210-1 costs \$2,195, and the 1210-2 costs \$1,895.

The company has also introduced the **1387A High Speed Matrix Printer** for users with a high-volume print demand in a space-restricted environment. The product emulates the IBM 3287 data stream and reportedly prints 400 char./sec. in draft mode.

Features include a top paper exit with a tear bar for quick paper removal, and a front paper entrance is provided for desk-top use. Color ribbon cartridges are also available.

The 1387A costs \$4,995.

Memorex Telex, 6422 E. 41st St., Tulsa, Okla. 74135. 800-331-2623.

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MICROCOMPUTING

M I C R O B I T S

Douglas Barney

On time, less baggage



Pman coming. Paltry things missing. As with any major deadline, there are some who question

whether OS/2 Presentation Manager will pop by its October due date. It's looking to be on time, but as one developer says, "It's not whether it will ship but what will ship."

To make the date, IBM and Microsoft are expected to make certain trade-offs. Fortunately, the firms will drop some of the less important features, leave the good stuff intact, and nobody will be the wiser. In fact, the disposed features are really too esoteric to mention and will show up in a later version anyway. Perhaps more important is the fullness of the shippable features, the performance and overall support.

If you want to know what the Presentation Manager will be like in its first incarnation, just hearken back to the original Windows 1.0. All the same elements will be there: It will be slower than many expect, it won't support enough devices, and there will be a shabby array of applications. In fact, it will probably take one to two years

Continued on page 38

Oracle PCs now multilingual

BY DOUGLAS BARNEY
CW STAFF

BELMONT, Calif. — Having dragged its feet a bit, Oracle Corp. now has an all-new set of dates for enhancements to its personal computer line, as well as a few tricks up its sleeve.

Oracle plans to bring its full array of mainframe language support, applications development tools and performance to its micro line, eventually.

For example, it recently announced TPS for its mainframe systems to speed transaction processing. This will be incorporated into a PC server product under development for IBM and Microsoft Corp.'s OS/2, slated to start shipping in beta form by October, said Gene Shklar, head of PC products at Oracle.

Although an Oracle micro-computer server is already avail-

able, it runs under Xenix. The OS/2 product, coupled with the TPS features, is being positioned as the "SQL server killer," according to Shklar, referring to the product being developed by Sybase, Inc., Microsoft and Ashton-Tate Corp. A final version of the product is scheduled to ship in early 1989.

Language interest

Languishing language support will begin to pick up as Oracle ships new interfaces. The firm already supports C and Cobol and said it will add support for Microsoft's Fortran this fall. Close behind will be Pascal and Ada support. After that, Oracle is looking to support other languages, such as PL/1.

A raft of long-awaited enhancements will appear with the release of the Oracle Version 5.1B for the PC. For example, a

Query-by-Example style front end called QMX will be part of the 5.1B release slated to be out this fall. Tossed into the 5.1B brew is SQL Report Writer, support for Micro Focus, Inc. Cobol and a couple of new elements.

For instance, 5.1B will be the launching point for SQL Loader, which offers improved facilities for loading non-Oracle files such as Ashton-Tate's Dbase. It will also include the SQL Menu, an application-menu front end for controlled access to hierarchical menus.

In addition, Version 5.1B adds the ability to run user applications in memory space beyond the 640K-byte limit of Microsoft MS-DOS. The current version allows only Oracle to use the so-called high memory. Oracle is working out an upgrade plan to Version 5.1B for current PC customers.

Prices dip despite RAM lack

BY ALAN J. RYAN
CW STAFF

Dynamic random-access memory (DRAM) chips are not coming down in price, but vendors that order large quantities can often work out stable contract pricing.

And for one vendor at least, that stable pricing has allowed for a reduction in personal computer prices.

San Jose, Calif.-based Wyse Technology credited its DRAM buying patterns for the reduction of prices on several of its WysePC 286 models. DRAM "delivery commitments allow us to better project costs," said

Continued on page 38

Data View

Uncle Sam bites at Macintoshes

Applications for Apple's Mac in the federal government

Agency	Number of Macintoshes	Applications
U.S. Environmental Protection Agency Branch offices	1,000	Desktop publishing, executive workstations
National Institutes of Health	500	Biomedical research
Naval Weapons Center	200	Word processing
NASA Space Station Program Office	196	Workstation for software development

CW CHART

Mainframe to RT? No sweat

BY ALAN J. RYAN
CW STAFF

MINNEAPOLIS — Software vendors are scrambling to bring mainframe applications to the micro level, all the while seeing dollar signs and huge installed-base figures before their eyes.

But one company based here thinks porting its mainframe insurance software package to the unlikely platform of IBM's AIX-based RT system is the way to go — an unlikely platform, that is, unless it sells. And with the relatively low cost and easy transi-

tion to the RT, it just might be worth the risk.

It all started when the sys-

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- From IBM to Microsoft: An interview with Maples. Page 37.
- Expert-system teaching made easy. Page 37.
- Computers help blind man read. Page 37.
- Vectra prices slashed. Page 41.

As Competition Gets Tough...A Top Insurer Gets Tougher with Help from Micro Focus COBOL/2 Workbench™

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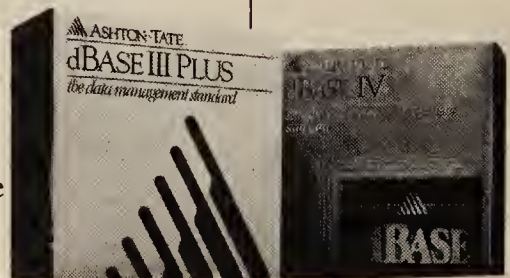
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MAC NUGGETS

Julie Pitta

Apple hits from behind



While AT&T and its nemesis, The Open Software Foundation, either squabble over or cooperate on the next version of Unix, Apple is quietly playing catch-up.

A/UX, an Apple-ized version of Unix, made its debut at the Uniforum show in February after a seven-month delay. At that time, Apple said the majority of "well-behaved" Macintosh PC applications would be compatible with A/UX.

It seems not many of the existing applications are well behaved, if compatibility with A/UX is any judge. According to Charlie Oppenheimer, product manager for the Mac line, an estimated 10% of current Mac applications can run under A/UX.

Oppenheimer says Apple is currently working with its third-party software developers to help them rework their applications to run under the new operating system. "The things that people have to change are not that difficult," he maintains.

Microsoft's Mac software packages are incompatible with A/UX, says Michael Homer, director of technical markets at Apple. "If it has any bug at all, you can't say that it's fully compatible. That doesn't necessarily mean the application doesn't run at all."

Apple may be faced with a catch-22 as it tries to encourage third parties to alter their appli-

Continued on page 39

IN PERSON

Like other IBM executives who recently defected from that company, Mike Maples has left one industry giant to work for another. As Microsoft Corp.'s vice-president of applications, he will oversee continued development of such products as Word, File and Excel as well as any new applications under MS-DOS, OS/2, Windows or Apple Computer, Inc.'s Macintosh.

Maples joined the company as it endures the rigors of corporate adolescence, complete with hard-to-manage growth spurts and the occasional identity crisis.

Maples' IBM background is readily apparent at Microsoft, where a new policy on banning most application preannouncements hearkens back to IBM's strict approach. But Maples, 46,



Maples keeps the tie on, even at Microsoft

says he has had no problem fitting into the youthful, campus-like atmosphere in Redmond, Wash. He discussed IBM's and Microsoft's futures with *Computerworld's* West Coast Correspondent Stephen Jones.

What are the biggest changes you have encountered moving from IBM to Microsoft, with that company's narrower micro focus?

They're more alike than I thought. Business is much more focused at Microsoft. You don't worry about what impact you might have on another business that you're not in. At IBM, you worry what impact a product has on the mid-range, on the high end or somewhere else. The lines of communication are much shorter; the way you make decisions is much shorter. There are only two or three people who will even vote on a decision.

Did you have to exchange a pinstripe suit for a Redmond sweatshirt?

I very consciously didn't do that. I said, "Look, I've got a lot of white shirts and ties and I'm comfortable wearing them and I've worn them all my life, and the way we'll deal with the dress code is if you don't care what I wear, I don't care what you wear — as long as it's appropriate."

So I haven't suggested that anybody change. The concession I've made is that on Fridays, I don't wear a suit. Or if I wear a suit, I wear a colored shirt.

We have a pool going as to how long I'll wear ties. But most people are already eliminated from that.

It seems more and more microcomputer software firms are preannouncing products. What is your feeling on that?

Continued on page 40

Making expert system development seem easy

BY SALLY CUSACK
CW STAFF

If you're looking for an easy, low-cost way to teach expert systems development in a microcomputer environment, Paperback Software International's VP Expert, a rule-based expert

system development tool, may be what you're looking for.

The Center for Law and Computer Science at Northeastern University in Boston is teaching students how to build expert systems. Using VP Expert, students find interesting applications for artificial intelligence techniques, including expert systems for determining tax deduction and federal assistance eligibility and system shells for sentencing procedures.

Paperback claims that learning the system does not require any special programming knowledge or equipment, making it an attractive AI tool for teaching, advising or diagnosing problems.

It includes a built-in text editor for rule development and al-

lows the use of any word processor that creates ASCII files. An inductive front end creates if-then rules directly from examples in data files, and the inference engine uses backward and forward chaining in using the rules for problem solving.

The Scientific Precision facility is said to include floating-point

arithmetic and trigonometric functions. The software is running on IBM Personal Computer XTs, ATs and compatibles.

"The main reason we like the system is because it is easy to learn and use," said Carole D. Hafner, an associate professor at Northeastern. "We are able to

Continued on page 40

SOFT TIPS

Too fast for Fastback

With Fifth Generation Systems, Inc.'s Fastback Plus on a 386, you may have problems running the DMA test. If your machine fails, the clock speed in the 386 is too fast for Fastback. Type `MODE SPEED=FAST` to slow down

the clock speed and run Fastback again. Set the speed back by typing `MODE SPEED=AUTO`.

Information provided by Corporate Software, Inc., a Westwood, Mass.-based software reseller.

From print to braille in one day

BY BONNIE MACKEL
CW STAFF

Like many blind Americans, John Jackson has been frustrated by his inability to get access to printed news and other current material. But that restriction is changing with a low-cost system that converts the written word to braille.

Instead of paying exorbitant fees and waiting for weeks after the event, Jackson, through an Inovatic Corp. optical character recognition system, is able to convert news to braille himself.

The system consists of an IBM Personal Computer AT or compatible, the Inovatic Readstar II Plus software, a Hercules

Computer Technology, Inc. or IBM Enhanced Graphics Adapter-compatible adapter board and a desktop scanner. After a document is scanned, the information is read by Readstar, run through a braille translator and printed on a braille printer.

The system boasts up to 99.9% accuracy and, according to Jackson, reads 2,300 characters per minute, or an estimated 40 pages an hour.

Jackson, a trainer at the National Library Service of the Blind and Physically Handicapped in Silver Springs, Md., is using the system to read books, magazines and selected articles in the newspaper. He can get hard copies of Supreme Court

decisions, have them scanned and converted into braille and read them the same day.

The only major drawback to the system is that it requires a sighted person — in this case, a friend of Jackson's, Norma Whetzel — to do the initial pro-

gramming. According to Whetzel, the system has to be taught font characters before it can recognize them.

"When the system understands all the characters, the blind person should be able to go through and scan the rest of the document himself," she says.

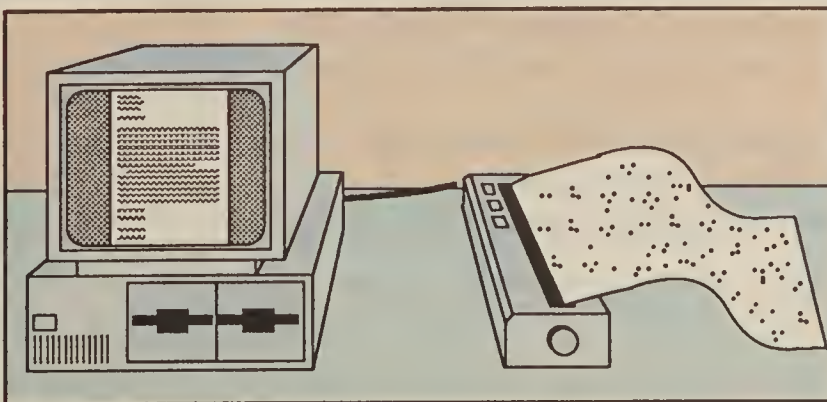
Most methods of translation require a sighted person to man-

ually key in the text. By using a scanner, the process is significantly reduced, Jackson says.

Before Jackson purchased the Readstar software, he relied on a Kurzweil Computer Products, Inc. 4000 system.

Jackson says the two systems are comparable except in price. The Kurzweil system, no longer available, was priced at about \$24,000; the complete Inovatic system at \$8,500. The Readstar software can be purchased for \$4,500 by those who already have a PC AT and optical character scanner.

Ideally, Jackson said he wants to be able to scan a 250-page book himself, after a sighted person does the initial training. "That is something I haven't done yet, but I see no reason why I won't be able to," he says.



Barney

FROM PAGE 33

after Presentation Manager ships for the environment to stabilize.

The dropped features probably aren't a big deal, because the new stuff that makes it into Presentation Manager will be ignored by many authors anyway. For example, converted Windows applications will avoid some of the new and buggy stuff such as the Graphics Programming Interface (GPI). GPI is a set of APIs for graphics that supposedly form an imaging model as broad as Postscript that, like Presentation Manager, promised great things.

So if you want Presentation Manager in all its glory, wait a couple years or buy a Mac or Windows today.

Another pearl from Uncle Jim. If you recall, my Uncle Jim is a retired Marine colonel running Windows on an 8088-based machine that sits on a desk looking out over a beautiful New Hampshire lake. His satisfaction with Windows' performance on a system that many contend couldn't power its own A> was a lesson for all who view themselves as chained to these heart-attack machines. Maybe if we slow down and simply enjoy our automation, we'll live a longer and happier life.

Well, it seems Uncle Jim has a bone to pick with companies that think they know what we need in a word processor. The theory is that, like a jet fighter plane, the one with the most features and best performance will outsell the others.

So these companies pile on features until our poor old PC looks like the cockpit of that fighter plane, with so much junk that not even the pilot understands what is going on.

Sometimes these overwhelmed pilots crash because important information — like that the ground is real close — gets lost in oil pressures, ground speed and wing flap readings.

Well, Uncle Jim swallowed that word processing hoopla and picked up a copy of Microsoft Word 4.0. But you know what he actually uses for word processing? Good old PFS:Write, which is about as low-end a package as you could hope to find. Word was just too cumbersome for his needs.

Uncle Jim's advice is simple. If you have basic word processing needs, save yourself some money and headaches and buy a basic package. If you're into complex documents, then go right ahead, buy the 20-pound package with the 500-page manual and hope for the best.

Barney is a *Computerworld* senior editor, microcomputing.

Prices dip

FROM PAGE 33

Steven Holtzman, vice-president of product marketing at the company.

Effective immediately, the list price of the 12-MHz IBM Personal Computer-compatible WysePC 286 single-disk WY-2112 has dropped from \$2,899

to \$2,699, and the 40M-byte hard-disk model, WY-2112-40, has been reduced from \$3,959 to \$3,759.

The price of the 8-MHz WysePC 286 single-disk WY-2108 decreased from \$1,899 to \$1,799, and the 20M-byte hard-disk WY-2108-20 fell from \$2,359 to \$2,259.

Also announcing PC price reductions last week was Morris-

town, N.J.-based AT&T. The new AT&T prices, effective immediately, affect pricing on the company's 6286, 6312 and 6386 Workgroup Systems (WGS).

The AT&T 16-MHz 6386 WGS models will now be priced from \$3,495 to \$6,395, reduced from \$4,659 to \$8,799.

The 20-MHz 6386 WGS now ranges in price from \$4,495 for the single-floppy model to

\$11,395 for the 300M-byte hard-disk model. Those units were previously priced from \$5,259 to \$13,395.

The Intel Corp. 80286-based 6312 WGS, with a 12-MHz clock, now ranges in price from \$2,595 to \$4,795, reduced from \$2,695 for the single-floppy unit to \$5,790 for the 68M-byte hard-disk version.

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No sweat

FROM PAGE 33

tems group at Northwestern National Life Insurance Co. came up with a package called Printing Management Information System (PMIS), for its own internal use on an IBM mainframe. The system performs management functions for in-plant scheduling

and inventory control.

The Northwestern group said it thought the package might have some appeal in other firms. So it created the Northwestern National Information Systems group, a division of the insurance company intended to develop and market the software.

Years after the original PMIS was developed, the information systems staff conducted an inter-

nal search to move it to a smaller system, explained Marvin Gillman, the company's marketing director.

Avoiding a rewrite

The systems group did not want to completely rewrite the software it had started developing for the mainframe in 1980 and completed in 1983. Then it discovered Unitecs, a software

package from Unisoft Corp. in Emeryville, Calif., designed to emulate the major features of IBM CICS on Unix.

The primary functions of Unitecs, according to Unisoft marketing director Steve Zalewski, are CICS development and running CICS applications on a Unix machine.

"We were impressed with the relative ease to take a mainframe

system designed to work under the CICS Cobol environment and move it to an alternative platform with a different operating system and have it function exactly as it does on the mainframe," Tom Prokop, MIS strategic technical advisor said. According to Gillman, the move to the RT took just more than two months.

PMIS is slated to be out by Sept. 1. Deliveries will begin in the fourth quarter. Pricing is \$50,000 for the mainframe printing subsystem and the same for the inventory and forms control subsystem. The RT versions of the subsystems will be licensed for \$40,000 each.

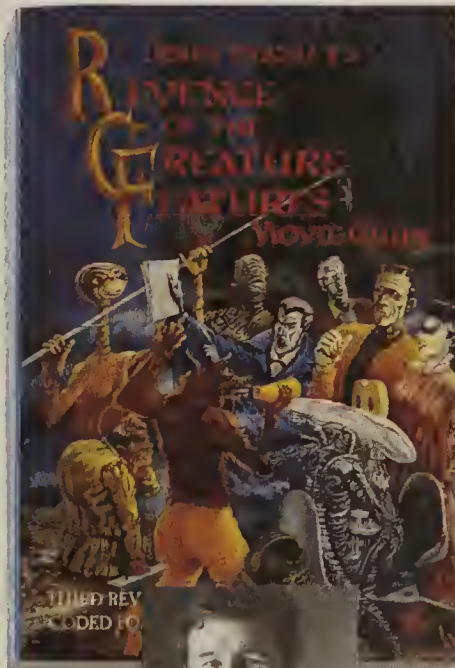
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Pitta

FROM PAGE 37

cations to work with A/UX. Since the installed base of Macintoshes running Unix is small at this point, few will likely be interested in devoting the resources to upgrading their software packages, particularly if sales are strong. If few applications are written for A/UX, the installed base will grow slowly.

"The fix is relatively easy," says Bill Higgs, industry analyst at Infocorp. "But I don't think most developers have much incentive to revamp their applications to Unix. They may just wait to do it in the next regular release of the product."

Cold, hard products

Apple officials say there has been a lot of interest in A/UX and that they expect that to be translated into third-party products in the next year.

"I haven't seen an awful lot of applications ported over to A/UX so far," Higgs says, "but it's still early."

Unix is considered more of a long-term strategic product for Apple, as the company hopes to broaden the Mac's acceptance. In the last year, Apple has established a federal marketing group and beefed up its engineering and technical markets group, as well.

Unix is considered essential to be a player in both those arenas. In many cases, the federal government is requiring Unix in contracts on which Apple wishes to bid. With the power of the new Mac IIs, Apple has a machine that is appealing to university departments. Universities have always been fertile ground for Unix.

"Apple has a fair amount of catching up to do," Higgs says.

In its recent moves, Apple has not only acknowledged that it is in a come-from-behind game in several markets, but with Unix on the Macintosh, it sees a way to play to win.

Pitta is *Computerworld's* West Coast senior correspondent.

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Microsoft

CONTINUED FROM PAGE 37

I don't want to announce products before they're ready to ship. There are business reasons not to do it, like how you get the product into the channel, what happens to the old product while waiting for the new one. Secondly, you don't want to feel forced to ship a product until it's absolutely ready. Thirdly, you want to maintain the flexibility of deciding what you're doing is right with a product until the last minute.

As a philosophy, we will announce fewer and fewer products with a delivery that's not immediate. I would hope that we'll announce a product on a Monday,

and a guy can walk into a store that day and pick it off the shelf.

That sounds like a fundamental change for Microsoft.

As a general rule, we ought to have less announcing before shipment and more announcing of availability with shipment. When you announce, you want people to do something, and that is go buy it. You really can't evaluate a product until you get your hands on it. So by announcing early, a person can't do anything other than say, "That's interesting."

What about MIS managers who need advance information to plan their budgets?

There is some validity to that in a product category that you have no products in. There is no validity to that in the second or subsequent version of a product.

Is this an approach that you have brought into Microsoft?

It is my philosophy. Companies go from one approach to the other. I wouldn't say it was not Microsoft's philosophy. But it certainly is something that I will manage to an extent that wasn't done before.

What role does the user play in software development at Microsoft?

There are several different classes of buy-

ers of our products. There are the distribution guys, who have a pipeline to users so they give us important information. We have information that users call us with, through product support and other feedback. We have large-account marketing where we go talk with our more significant buyers. We get most of our information there.

Have we seen the last of new character-based DOS applications from Microsoft?

We will do some more entry kinds of products and new versions, but that won't be the primary focus. A year from now, 95% or more of our development efforts will be on graphical user interface applications.

Expert system

CONTINUED FROM PAGE 37

focus on development, not programming.

"It was also a good deal for the dollars," she added, noting that while there are a number of technical drawbacks in the product, such as its somewhat limited explanation facility, she is satisfied with its overall price/performance. The university previously experimented with Borland International's Turbo Prolog but found it too difficult to learn in a short period of time.

Philip Martz, senior AI engineer at Smithkline Beckman Corp. in Fullerton, Calif., said he uses the product for teaching and is particularly pleased with VP Expert's induction method for creating the knowledge base.

The company manufactures scientific and medical instruments and once a month offers employees classes in expert system development. A proprietary system shell is used for large and medium-size applications, but students are taught the initial concepts using VP Expert.

"The system is not as flexible as we would like it to be. For example, its report generation capabilities are too cumbersome, but we feel it is perfectly suited to short answers," Martz said. The product is being run on XT's and AT's with 640K bytes of random-access memory.

Credit check

The Bank of Montreal in New York has been using VP Expert for about six months. Arthur Silvergate, manager of information systems, said he wants to develop a system to approve credit checks and assist in loan processing.

"We needed a product simple enough to turn over to end users, and there just aren't that many expert system packages out there for the PC," Silvergate said.

The bank also considered using Prolog but found it too complicated for end-user development. Silvergate said that VP Expert offers Help screens and thorough documentation.

The product's single disadvantage, according to Silvergate, is the front-end system. He said more of a question-and-answer format would be advantageous. The bank is still testing the product, which is being used on an IBM Personal System/2 Model 50.

VP Expert requires a minimum of 384K bytes of RAM and two disk drives. Fixed disks are recommended. The program is not copy-protected and is available in 3½- and 5¼-in. formats. Suggested retail price is \$124.95.

Can your
async network
pass this simple
test?

NEW PRODUCTS

Systems

Hewlett-Packard Co. has announced price reductions on its HP Vectra personal computers.

Pricing on the HP Vectra ES and HP Vectra RS systems has been reduced by as much as 18%. For example, the HP Vectra RS/20 Model 300 PC, which has a 310M-byte hard disk drive and is based on a 20-MHz Intel Corp. 80386 microprocessor, has been reduced from \$11,995 to \$10,495. Complete price-reduction information on the product line can be obtained from the vendor.

HP, 3000 Hanover St., Palo Alto, Calif. 94304. 415-857-1501.

Vector Computer Corp. has announced a 20-MHz Intel Corp. 80286-based computer. Dubbed the Vector Excalibur 286, the IBM Personal Computer AT-compatible machine is particularly suited for computer-aided design, desktop publishing, networks and financial modeling, the vendor said.

The system boasts memory expansion capabilities to 4M bytes without expansion slots, and one parallel and two serial ports are standard. It is available in 40M-, 65M- and 120M-byte configurations.

The Vector Excalibur 286, in a basic single-drive version, costs \$2,295.

Vector Computer, 7 Vernon St., Norwood, Mass. 02062. 508-769-5318.

Software applications packages

A word processing package that offers pull-down menus and Help screens is now available from Professional Software, Inc. Called Textmate, the software includes a 90,000-word spelling checker and a 10,000-word thesaurus.

The program allows users to create columns, draw boxes and change fonts and is said to be compatible with most laser, daisywheel and dot matrix printers. The package will import and export

ASCII files and has mail-merge capabilities and built-in macros.

Textmate costs \$295.

Professional Software, 51 Fremont St., Needham, Mass. 02194. 800-343-4047 or 617-444-5224 in Massachusetts.

A program for managing and retrieving large amounts of unstructured textual business data, such as personnel records and sales reports, is now available from Persoft, Inc.

Called Ize, the software generates an outline that will identify and summarize the underlying relationships of all data that matches a user-specified search request. The package also includes a built-in word processor and can import ASCII file formats from other programs. Ize runs on IBM Personal Computer XTs, ATs, Personal System/2s and compatibles with IBM PC- or Microsoft Corp. MS-DOS.

Ize costs \$445.

Persoft, 465 Science Drive, Madison, Wis. 53711. 608-273-6000.

Software utilities

A microcomputer analyzer and troubleshooter utility has been announced by CSSL, Inc. Called System Sleuth, the package supports IBM PC- or Microsoft Corp. MS-DOS or PC-MOS/386 configurations.

The program will verify system configuration information as absolute disk parameters determined by probing the physical device. It will also provide information concerning device chain maps, user memory maps, hardware types and brands of expansion boards installed.

System Sleuth costs \$149.

CSSL, Suite 202, 909 Electric Ave., Seal Beach, Calif. 90740. 213-493-2471.

Cyco International, an international distributor of supplementary personal computer software, has announced the U.S. introduction of the Flying Dutchman, a data transfer software package.

The product is said to transfer files, groups of files and entire directory trees between IBM and compatible personal computers at rates of 250K bit/sec. The program is a Wordperfect Corp. and compatible command shell and combines Wordperfect function keys with menus. It comes in 3½- and 5¼-in. formats.

Flying Dutchman costs \$99.

Cyco, a subsidiary of Cyco Automation, 1908 Cliff Valley Way, Atlanta, Ga. 30329. 404-634-3302.

OS/2 software

Cadre Technologies, Inc. has announced a computer-aided software engineering (CASE) tool that runs in the OS/2 operating environment.

Called Teamwork for OS/2, a single-user version of the product is scheduled to be available in September and will reportedly run on IBM Personal System/2 and compatible systems, including the PS/2 Models 50Z, 60, 70 and 80. A multiuser version of the package is slated for release early in 1989.

The Teamwork series of CASE products is available to run on all standard workstation platforms from Apollo Computer Systems, Inc., Digital Equipment Corp., Hewlett-Packard Co., IBM and Sun Microsystems, Inc.

Teamwork for OS/2 will cost \$4,995.

Cadre, 222 Richmond St., Providence, R.I. 02903. 401-351-2273.

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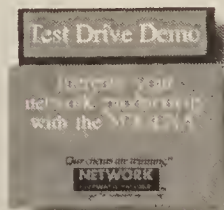
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40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government — State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/Refining/Agric
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Computer & DP Services, including Software/Service Bureau/Time Sharing/Consulting
90. Computer/Peripheral Dealer/Distributor/Retailer
95. User Other
95. Vendor Other

(Please specify)

2. TITLE/FUNCTION (Circle one)

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21. Dir., Mgr., Suprv., IS/MIS/DP Services
22. Dir., Mgr., Suprv., of Operations, Planning, Adm. Services
23. Dir., Mgr., Suprv., Analyst, of Systems
31. Dir., Mgr., Suprv., of Programming
32. Programmer, Methods Analyst
35. Dir., Mgr., Suprv., OA/WP
38. Data Comm. Network/Systems Mgt
DOTHER COMPANY MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President/Asst. VP
13. Treasurer, Controller, Financial Officer
41. Engineering, Scientific, R&D Tech. Mgt
51. Sales/Mktg. Mgt.

DOTHER PROFESSIONALS

80. Consulting Mgt
70. Medical, Legal, Accounting Mgt
80. Educators, Journalists, Librarians, Students
90. Others

(Please specify)

3. COMPUTER INVOLVEMENT (Circle all that apply) Types of equipment with which you are personally involved either as a user, vendor, or consultant

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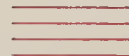
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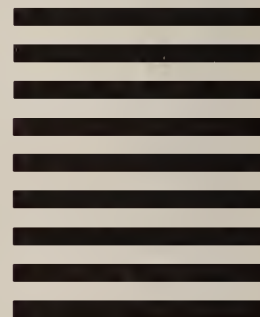
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DATA STREAM

Patricia Keefe

Protecting standards



The recent furor surrounding the efforts of one networking vendor that tried to bend its participation in the standards process into a marketing tool has turned the spotlight on the larger issue of the use and misuse of the standards process.

The topic itself is hardly new; what is startling is the willingness of the venerable and ordinarily conservative Institute of Electrical and Electronics Engineers (IEEE) to go public with its frustrations.

Earlier this month, the IEEE Standards Office filed a protest with the Securities and Exchange Commission challenging the accuracy of some statements made in the prospectus of Synoptics Communications [CW, Aug. 22].

The IEEE took issue with statements that it said strongly implied that the standard for running high-speed Ethernet over telephone wire was based on technology developed by Synoptics.

Also angered by what network consultant David Terrie once characterized as an effort to "take singular advantage of a

Continued on page 45

California slices telecom costs

Deal with Pacific Bell saves \$6.5 million, opens pipeline to digital data

BY KATHY CHIN LEONG
CW STAFF

SACRAMENTO, Calif. — Instead of continuing to pay a monthly tariff for 90,000 Centrex lines, the state of California has negotiated a five-year, \$85 million agreement with Pacific Bell that slices \$6.5 million off its annual telecommunications bill.

The move also prepares the state for a fully digital network. Pacific Bell has agreed to upgrade its analog central office switches to digital devices in some 50 locations during the next five years. A digital environment will support the merging of voice and data into the same pipeline.

The pact with Pacific Bell underscores the state's aggressive bid to take a more cost-effective approach with its networks while preparing for the future.

Today, the Centrex network is used primarily for voice services. Data services are available through Pacific Bell, and Allan Tolman, the state of California's chief of telecommunications, said the state will gradually evaluate those services as the digital switches are installed.

In the current installation, Centrex provides local loop access within a local calling area. Calls are carried through to other Centrex facilities via the long-distance network that the state has dubbed the Automated Telephone Switching Service.

Trust in others

While many corporations and agencies have opted to bring networking in-house under their own management, the state thus far prefers to leave the network management to supporting vendors.

However, California is not locked into dependence on carriers. It has also negotiated an option to cut back 30,000 Centrex lines in 18 months, should it decide that purchasing configurable central office switches in-house is a more economical alternative. And despite the pact with Pacific Bell, Tolman stressed that a move to operate a private voice and data network would come in the future.

The state has also issued a request for proposals requiring that the new switches offer features compatible with such emerging technologies as Integrated Services Digital Network. The bid request also requires that the vendor perform on-site maintenance and network management. The switches would be placed in San Francisco, Sacramento, Calif., and

Continued on page 44

Passing the word on GOSIP

BY MITCH BETTS
CW STAFF

NATICK, Mass. — The U.S. government will soon adopt the Government Open Systems Interconnect Profile (GOSIP) as its standard for computer networking, but it may be several years before GOSIP compliance is required under large-scale contracts, according to a recent report by Venture Development Corp.

GOSIP is a subset of the International Standards Organization's Open Systems Interconnect (OSI) model, which is closely aligned with the Technical and Office Protocol standard.

The National Bureau of Stan-

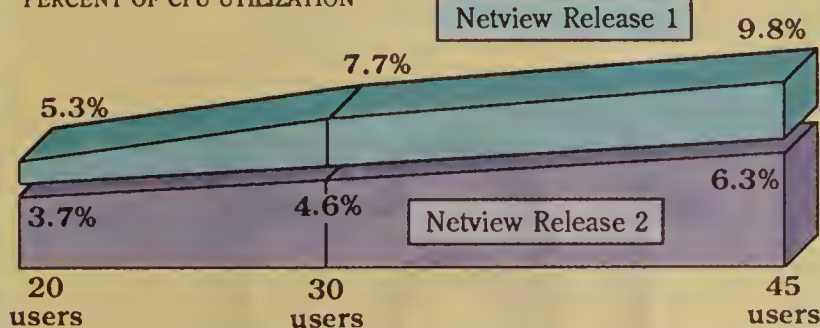
Continued on page 44

Data View

Newer Netview saves resources

IBM's Netview Release 2 used only about 6.3% of CPU resources on an IBM 9370 Model 60 supporting 45 users

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SOURCE: AN IBM BENCHMARK
CW CHART

TCP/IP made easier

BY ELISABETH HORWITT
CW STAFF

BOSTON — Command Technologies, Inc. has introduced software that reportedly eliminates much of the grunt work involved in writing applications to TCP/IP networks and in eventual migration to the Open Systems Interconnect (OSI) standard.

The TCP/IP Interface Module (TIM) provides a standardized way for applications to set

up asynchronous, bidirectional sessions between systems over a Transmission Control Protocol/Internet Protocol network, according to Command Technol-

Continued on page 44

Inside

- Industry endorses communications specifications. Page 45.
- Altos unit said to integrate DOS, Unix. Page 48.

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GOSIP

FROM PAGE 43

dards is expected to officially adopt GOSIP as a federal standard by Sept. 30, a development that will prod vendors into offering GOSIP-compliant products, said Paul H. Nelson, a networking consultant at Venture, a market research firm based here. Even so, the report predicts a slow migration to GOSIP. Nelson said the biggest factor in delaying user acceptance will be deficiencies in the OSI model.

He cited the fact that OSI specifications for key features, such as network management and security, are still in the works. "The weakest link is the limited functionality of OSI," said Nelson, who authored the GOSIP study.

After a two-year grace period, GOSIP will be a mandatory part of federal information systems contracts unless a waiver is obtained [CW, June 13]. Nelson said there may be a flood of agency waivers granted until federal managers are confident that OSI security and performance issues have been addressed.

Initially, the GOSIP market will be limited to small pilot projects, Nelson warned. "The big danger for GOSIP is that people expect this huge market because the government is such a large

buyer of technology, and it turns out to be smaller," he said.

Although the GOSIP market may develop slowly, Nelson said it is the right path for government users and vendors to follow. "In the long run, OSI is the way to go," he said. He recommended that vendors use the next two years to develop expertise with OSI-based products and services.

Telecom costs

FROM PAGE 43

Los Angeles — three cities that carry more than 80% of the current calling traffic.

Decisions

While a decision on the main switch vendor will be made in January, Tolman said incoming

bids will be compared with the Centrex service used today. "We will have to see what is most cost-effective for the state," he said.

As the digital services come on-line within the next five years, Tolman said the state's 200,000 users will be able to have access to such features as electronic mail services, packet-switching services and other

data options.

No commitments have been made yet on these Pacific Bell offerings, although the state of California will serve as a beta-test site for Pacific Bell Connection, a technology trial for E-mail.

"We are proceeding cautiously," Tolman said. "Unlike a corporation, our decisions take much longer to make."

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TCP/IP

FROM PAGE 43

ogies President Franco Vitaliano. TCP/IP lacks standardized session specifications, requiring users to spend three to five months developing session software for each new type of system they add to the network, he added.

Applications written to TIM's common session specifications reportedly can be ported across TCP/IP implementations on a variety of operating systems. These include Digital Equipment Corp. VAX/VMS and Ultrix, IBM PC-DOS, Sun Microsystems, Inc. and Apollo Computer, Inc. environments and systems based on the Mips Computer Systems, Inc. SQL chip. Other systems will be supported in the future, Vitaliano said. TIM also can be embedded in existing applications in about two hours, he claimed.

A future release of TIM, scheduled for delivery in the first quarter of 1989, will support the lower layers of OSI as well as TCP/IP. This will allow the same applications to be used in either networking environment.

TIM is available now for the following systems: DEC Vaxstations and Sun and Apollo computers for \$750 per node; multiuser VAX/VMS systems for between \$2,450 and \$9,950; and PC-DOS systems for \$295.

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BIT BLAST

Industry embraces CAS spec

Support is already piling up for the recently announced **Communications Applications Specification (CAS)** from Digital Communications Associates, Inc. and Intel Corp. **Novell, Inc.** endorsed the specification, suggesting it will ease development of gateways from its message-handling service to other messaging envi-

ronments. **Conetic Systems, Inc.**'s Higgins To:Fax mail software will support Intel's Connection Coprocessor, which is so far the only hardware utilizing CAS today. Also, **Wordtech Systems, Inc.** said last week its database management and networking software will support CAS. Wordtech also announced development of a board that will plug directly into Intel's Connection Coprocessor.

Digital Equipment Corp. has announced an agreement certifying **Ing. C. Olivetti & Co.** personal computers as compatible with DEC's Network Applications Support program, thus opening a window for users of Olivetti's PCs into the DEC networking environment.

Novell has agreed to supply **Gandalf**

Technologies, Inc. with Netware Version 2.1 fault-tolerant software. Gandalf plans to implement Netware into its Star-master product, enabling the networking system to act as a file server, a local-area network gateway and a bridge for IBM PC users, the firm said.

Gould, Inc. has executed an agreement with **Cray Research, Inc.** under which Gould will market a special high-speed communications link for systems provided by the two manufacturers. The link is part of a new Gould offering called the Supercomputer Front-End Processor.

Nynex Systems Marketing and Microcom, Inc., a software-based workstation connectivity company, have signed a seven-year, \$1.1 million contract under which Nynex will design, install and maintain a telecommunications system at Microcom's new headquarters, currently under construction.

Dallas-based telecommunications systems developer **Concept Communications, Inc.** has launched a five-year, \$20 million agreement to provide its personal computer-based Image 30 videoconferencing equipment to **Skycom** for integration into its Skyswitch satellite service.

Hughes Network Systems, Inc. has inked an estimated \$2 million pact with **GTE Spacenet Corp.** for 125 Personal Earth Stations, as well as associated central earth-station equipment and network control software.

Netrix Corp., a supplier of wide-area networking equipment, has announced an agreement with **Telindus NV** in Belgium, to market the Netrix No.1-ISS Integrated Switching System. Telindus expects to sell in excess of \$8 million in Netrix switching equipment during the next three years.

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Keefe

CONTINUED FROM PAGE 43

group victory," two competitors filed similar complaints.

Whatever motives you assign to Synoptics' competitors, the point is that the IEEE felt compelled to put its foot down.

But not down on Synoptics per se, because, as noted by Don Loughry, chairman of the IEEE's 802.3 Capital Working Group, many companies habitually invoke standards in their data sheets and sales pitches. He claims vendors are increasingly abusing references to standards activity in ways that are becoming significant.

What's the problem?

But what is the IEEE really upset about? Just the dilution and weakening of the standards process. "When you write a standard, you try to be as open, constructive and positive as possible. It's a win-win [situation] for all; everyone gives up a little in order to create an open and trusting environment," Loughry says. So it is understandable that participants in the exercise, who spend megabucks adhering to the new standard, pale at the thought that users might view those efforts as less than trustworthy.

And how could that happen? Very easily. Take a look at the Open Systems Interconnect (OSI) seven-layer connectivity model. The OSI banner has long been waved as the answer to closed network systems. Naturally, communications suppliers have embraced OSI with fervor. Hardly a press release goes by this desk that doesn't dangle the teaser "OSI-compatible."

But what does that really mean? Some vendors truly can demonstrate compatibility with the standard as now drafted and are careful to note that they will migrate their products to the final product specifications. Then there are those that wave the OSI flag with great ardor but, when questioned closely, appear to be talking about future plans to migrate to OSI.

Oh, I see. The problem is, some users don't ask those questions. So now imagine a user who has shelled out a substantial sum of money for a network that he believes to be OSI-compatible. If it should turn out that significant revisions are required to make this network commune

with the final OSI specifications, not only is that user in for a nasty shock, but groups like the IEEE fear the standards process will become the scapegoat.

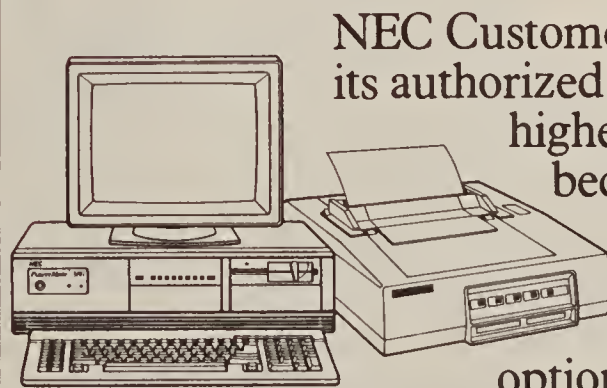
So to protect all this hard work, the IEEE wants to make sure its standards are not represented as being something they aren't. And so they are taking the gloves off. "There's a feeling among a number of us that we just have to say, 'Whoa, this can't go on,' " Loughry says.

While the IEEE's vigilance will undoubtedly bear fruit, users still have to

take responsibility for protecting themselves. Take a tip from Joe Friday: Cut through the marketing flash and get the facts. If you're going to put buzzwords in your requests for proposals, make sure you understand what you're talking about. Otherwise, you could end up buying everything but the kitchen sink and miss the standard you were looking for in the first place.

Keefe is a *Computerworld* senior editor, networking.

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AT&T 620 MTG terminal (left) supports common business graphics interfaces. AT&T 615 MT (right) is the recommended multitasking UNIX System Administration terminal.

AT&T's windowing technology, built into the 600 Series, provides a seamless link to UNIX System V's multitasking capability and gives the terminals unprecedented windowing power. The result is that one 600 Series Terminal can do the work of several ordinary ones, saving you time, money and space, and improving productivity.

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AT&T's terminals allow you to display up to seven windows simultaneously, putting the world truly at your fingertips.

can use the powerful multihost, multitasking windowing system built into the 600 Series Terminals to preview data from up to seven different sources, both local and remote, at the same time. You can run multiple live applications concurrently.

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AT&T 630 MTG terminal: Provides dual-host access and down-loadable applications (left), provides high resolution display of engineering or business graphics (right).

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NEW PRODUCTS

Local-area networking hardware

Altos Computer Systems, Inc. has introduced a networked computer workstation that is said to integrate DOS and Unix applications.

Designated the **WS 100**, the system is IBM Personal Computer AT-compatible and offers concurrent access to Microsoft Corp. MS-DOS and Unix applications in an icon-based window environment, the vendor said.

The product runs MS-DOS 3.2 or higher applications without modification

and comes bundled with an Ethernet-based Unix server connectivity board, the Altos Advanced Communication Processor Attachment. The unit's Intel Corp. 80286 processor is switchable to 6, 8 or 10 MHz and includes 640K bytes of random-access memory.

The WS 100 with the processor attachment costs \$1,795. The price does not include the operating system or monitor. The processor attachment board may be purchased separately for less than \$500.

Altos Computer Systems, 2641 Orchard Pkwy., San Jose, Calif. 95134. 408-432-6200.

Local-area networking software

Oracle Corp. is shipping **Lanserver Oracle**, an SQL database server that reportedly responds to high-level SQL requests from personal computer workstations across a local-area network.

The product communicates with DOS workstations on a LAN using the Transmission Control Protocol/Internet Protocol. It is compatible with Novell, Inc.'s Netware Ethernet LANs when used with Excelan, Inc.'s LAN Workplace software and network cards. An Intel Corp. 80286- or 80386-based machine with 4M bytes of random-access memory is required for operation. PC workstations require DOS

3.1 or higher, 640K bytes of RAM and either Networkstation Oracle software or Professional Oracle software with a networking option.

Lanserver Oracle costs \$2,495. Oracle, 20 Davis Drive, Belmont, Calif. 94002. 415-598-8000.

Network management

Able Computer Communications has announced a fourth-generation family of local-area networking products for users of Digital Equipment Corp.'s systems and peripherals. The products reportedly combine twisted-pair technology with full Ethernet/LAT compatibility. Other features include data security, network management and wide-area network support.

The **Easyway LAN** series offers a non-DEC Ethernet/LAT solution that uses DEC software, the vendor said. Any software changes may be downloaded from the host computer under a licensing agreement from DEC.

The series includes both concentrated servers for data center-oriented systems and distributed servers for terminals and printers.

Remotegate, a wide-area gateway, is said to interconnect multiple and dispersed Easyway LANs with no hindrance to network security. The gateway features multiple high-speed, redundant links and error recovery and transmission. It is fully compatible with all Easyway LAN servers.

The Easyway LAN series is priced from \$100 per network connection.

Able Computer Communications, 2567A S.E. Main St., Irvine, Calif. 92714. 714-553-1188.

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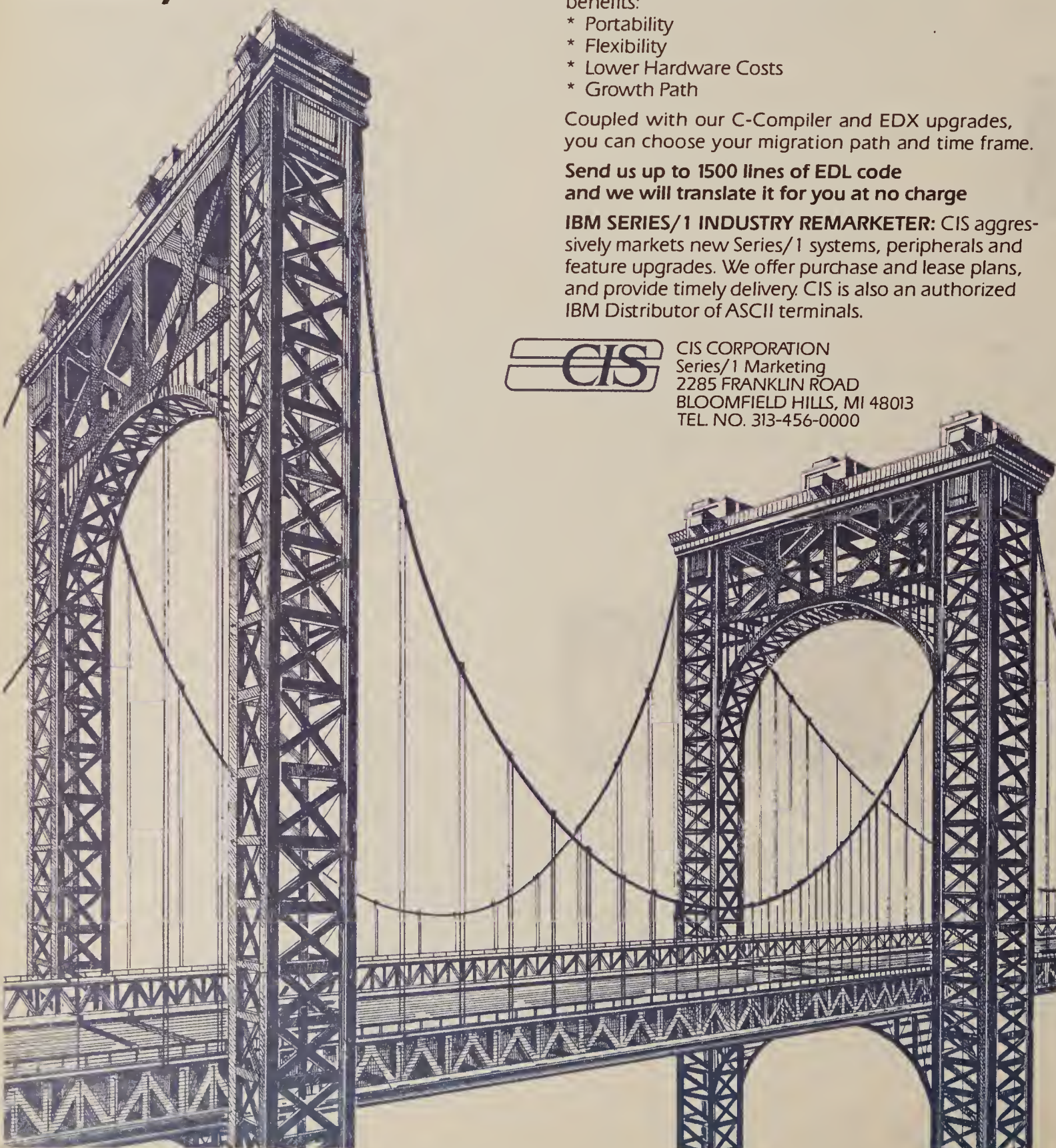
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Links

Applied Innovation, Inc. has announced the **AIswitch Series 90**. The product is an intelligent device that was developed to connect and switch workstations or CRTs to computer host ports, personal computers or hard-copy devices.

The Series 90 can reportedly be used as a port selector or port contender, or optionally as a CCITT X.25 gateway to synchronous packet-switched networks. The product is packaged in a high-density enclosure that can be a desktop model or can be rack-mounted in 5 in. of vertical disk space. Systems are available for 16, 32, 48 or 64 synchronous ports.

The AIswitch Series 90 costs from \$1,995 to \$4,980.

Applied Innovation, 651-C Lakeview Plaza Blvd., Columbus, Ohio 43085. 614-846-9000.

Electronic mail

An electronic mail system designed to facilitate the planning of global conferences has been enhanced by **Applied Data Research, Inc. (ADR)**.

Users of **ADR/Email Release 3.1** can schedule in-person meetings, conference calls and teleconferences electronically across time zones and date lines. The package supports IBM 3270-, 3290- or 3180-type terminals as well as IBM Personal Computers with 3270 emulation.

ADR/Email costs from \$21,500 for IBM VSE, \$32,000 for VM/CMS, \$35,000 for MVS and \$36,800 for MVS/XA. Six-month, three-year and five-year leases are available.

ADR, Route 206 and Orchard Road, Princeton, N.J. 08543. 201-874-9000.

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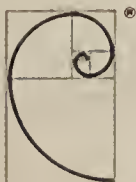
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PRODUCT SPOTLIGHT

THE DB2 MARKET

Add-ons fuel user appetite for IBM DBMS

BY LARRY STEVENS

DB2 users aren't expecting their need for supplemental products to disappear when IBM introduces its beefier DB2 Version 2 in October. The added functions, performance and operational enhancements offered by the new release will reportedly greatly increase the value of the database management system, users say, but they do not remove the necessity for third-party tools and auxiliary languages or home-grown application utilities.

"Each release of DB2 has made users' lives a little easier, but users still need to patch up holes with a supermarket basket of tools," says David Saul, assistant vice-president of data administration at Maryland Casualty Co. in Baltimore. "IBM seems content to leave plenty of areas of opportunity for others to battle in. It might even be their strategy."

The history of DB2 is one of slowly increasing functionality and performance, but none of the previous releases has caused third-party vendors any sleepless nights.

Version 1, which became available in May 1985, was built to offer a relational DBMS for small primarily personal applications on the IBM mainframe. It was restrictive and slow, running at 20 transaction/sec.

Release 1.2, made available in April 1986, added the optimizer, a facility that in theory determines the best data access strategy. It also provided support for IBM tools such as Cross Systems Product (CSP) and Query Management Facility (QMF). At 47 transaction/sec., it was also faster.

Release 1.3, available in May 1987, allowed for three new data types — date, time and time stamp — and provided a number

Stevens is a free-lance writer based in Springfield, Mass.



PETER KUPER

of operations for those data types. It also provided certain facilities to make upgrading to Version 2 more straightforward. And at 53 transaction/sec., it was faster still.

Version 2 is said to be easier to use and provides more complete security features and a re-

source governor, which can restrict the amount of use a client can have. It is also expected to be very fast — 180 transaction/sec. by some estimates.

Probably the best news of all, in the estimation of users, is that this version will provide referential integrity, the capability that

allows for automatic changes across tables when a single change is made. Lack of referential integrity has been one of the most pressing complaints about earlier versions.

When asked what they are looking forward to in the new version, most users say the same two things: performance and referential integrity. And while increased performance has become the *sine qua non* of new releases, referential integrity was less expected and very welcome.

Furthermore, of the new features in Version 2, referential integrity will likely have the most dramatic effect on how DB2 is used and on the structure of the applications written for it.

At the Bank of Montreal — which uses DB2 as a transaction-processing system and information reporting tool and, to some extent, a decision support tool — ensuring data consistency is a mounting problem.

"The more our company grows, the more shared tables we use, and consistency among the data in those tables is becoming more and more of a problem," says Terry Mason, the bank's database project manager. "For those of us used to working on hierarchical systems, referential integrity had always been a fact of life. Now we have the easier reporting and updating of relational systems, but we have to worry every time someone changes a table."

Mason concedes that referential integrity will make more work for the database administrator, since that person will have to resolve the relationships between the tables. "But," he says, "that's something they always had to do with hierarchical systems anyway."

The lack of referential integrity is also limiting the ways users access DB2. "As it stands now [without referential integrity], I feel very uncomfortable doing a join," says Diane Brown, system consultant at Associated Insurance Companies in Indianapolis, "and I've tried to find adequate ways of going

INSIDE

Safe Betting

IMS users prefer to split their DBMS wagers. Page 54.

One Step Ahead

Users are ready and waiting for DB2 applications. Page 58.

Shake-up or Shakeout?

Independent DBMS vendors adjust strategies. Page 61.

IBM DBMS

FROM PREVIOUS PAGE

around it." Her primary method of doing joins is to use SAS Institute's Proc DB2Ext to create a data set using values from the DB2 table.

According to some experts, users who have referential integrity included in their applications may want to eliminate or shut it off, since in most cases, database referential integrity is more secure.

Management Science America, Inc. (MSA), the Atlanta-based mainframe application software company, currently provides referential integrity in most of its applications and, according to Lawrence Catchpole, MSA's manager of DB2 development, will continue to do so, since it can be turned off at will.

"As far as I can see," Catchpole says, "ours is as powerful as the one IBM will be coming out with. But, he adds, having referential integrity in the database itself

provides protection outside of the application. "I

want to reserve judgment until I see it, but I expect that Version 2's referential integrity will allow users to work with the database more safely."

Until Version 2 comes out, Catchpole advises clients

to allow read-only access to the database and to make updates only through the application.

While the referential integrity that is contained in applications may become unnecessary, after October, utilities that provide a high level of integrity may still be useful for special purposes.

Mike Caplan, an analyst at the Independent Advisory Group, a subsidiary of John Hancock Insurance Co. in Boston, has looked at the specifications for Ver-

sion 2 and says he is not ready to throw In-
tex Solutions, Inc.'s SQL:Verify, a utility that provides referential integrity, into the trash. "In our business, there is a lot of exception-based reporting that can't be programmed efficiently with DB2," he says. When doing exception reporting, the system has to find where one or two items are not in line with the way those items are normally presented. "There are situations that may look like a lack of integrity, but either there really isn't a problem, or we want to let it go since it would be too much work to resolve it.

"In the IBM model, if something is perceived as wrong, the system will disconnect the entire relational aspect," Caplan continues. "We would find that too difficult and usually unnecessary. What we need is a snapshot of the system to decide what goes through and what doesn't." SQL:Verify warns Caplan of possible loss of referential integrity and reports the location of missing, duplicate or unreferenced keys.

Security makes life difficult

While the lack of referential integrity has vexed many users, DB2's security features also rank high in the complaint list, not because they aren't effective enough, but because they are too complex and cumbersome.

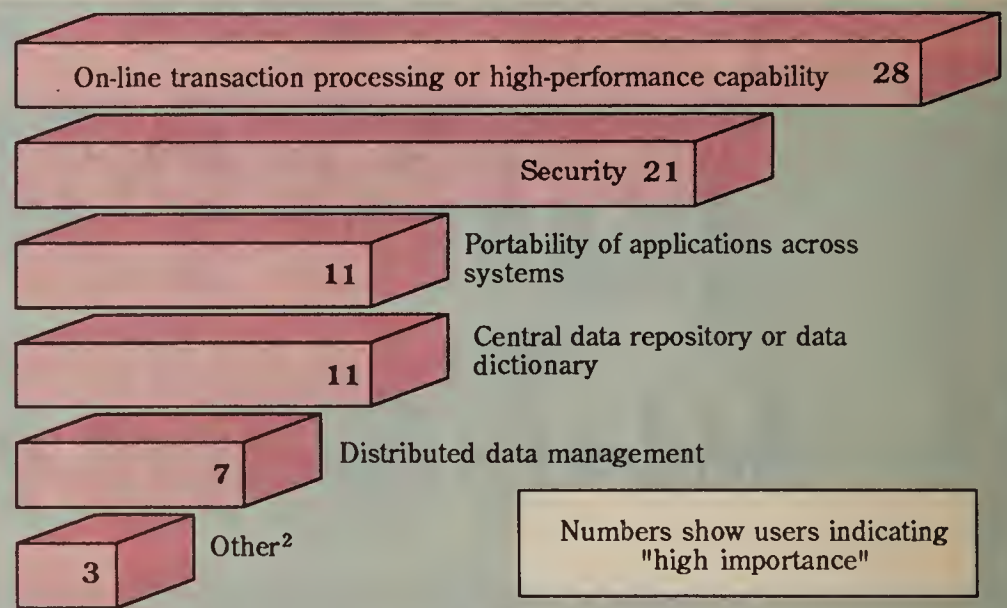
Explains Robert Pokorny, lead system programmer in performance and capacity planning at The St. Paul Companies, Inc. in St. Paul, Minn., "DB2 was developed for an ad hoc environment, and its security features reflect that." He points to the fact that each user's access authorization environment has to be built separately, making the transition to a production environment difficult.

"If a user leaves, everything has to be regenerated," Pokorny says. "And you're never sure what he's going to take with him. We've spent hours in meetings here trying to come up with administrative ways to solve this problem, and we still haven't completely licked it."

Norris Van Den Berg, IBM's manager of data systems architecture and strate-

What matters most

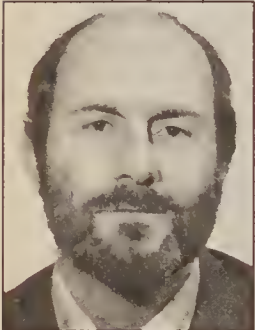
Among the capabilities rated by users¹ as most important to their DB2 operations during the next few years, on-line transaction processing and high-performance capability ranked highest



¹Base of 56 respondents; multiple responses allowed

²Includes fourth-generation languages, multiuser facilities and reliability

SOURCE: INTERNATIONAL DATA CORP. CW CHART



Bank of
Montreal's
Mason

gy, says this problem will be partly solved by Version 2's group authorization security feature. This feature will permit administrators to grant file access by functional area in appropriate instances, instead of having to authorize strictly on an individual basis. Version 2 adds an auditing facility that lets the database administrator keep track of the data users try to access.

Steve Bryant, manager of data administration at Biggers Brothers, Inc. in Charlotte, N.C., welcomes IBM's group authorization but says he has no intention of giving up On-Line Software International, Inc.'s Toolset-DB2, a utility to increase database administrator productivity, which he uses to create SQL Grant and Revoke statements for security management.

"The problem with DB2's security is that the authorizations are scattered throughout numerous tables," Bryant says. "If you haven't made careful notes and written everything down, you have to

query all the DB2 catalogs to find out what authorization a particular person has. Group authorization won't affect that. And Version 2 won't provide a quick way to set up groups that have similar, but not exactly the same, authorization to one that already exists."

Using Toolset-DB2, Bryant can query all authorization tables to see what authorization users have. It also lets him change a user's ID to someone else's name — in effect, cloning the user's authorization.

Talking to DB2

Another area where many users feel that DB2 could stand improvement is in its provisions for a user interface. At present, IBM's main user interface to DB2 is Query Management Facility (QMF).

QMF was developed as a user-friendly interface that would allow non-data processing managers and executives to develop and store SQL queries as well as share queries with other users. But Joseph E. Wehr Jr., president of Data Base Management, Inc., a Manchester, Conn., database training company, says, "QMF is only a fair to adequate end-user tool. One difficulty is that in order to make complete use of it, you either have to know some SQL or someone has to pre-package SQL queries for you."

Wehr has found that most companies are gravitating toward some end-user QMF participation, but movement in this direction is slow. Often what happens, he says, is that the DP department creates standard queries that users can either accept without change or modify slightly.

"Most DP departments want a degree of control over QMF resource utilization because they're afraid of an inordinate drain on the system," Wehr says. "The end user might put on the screen what seems like an innocent SELECT statement, but [the statement] may cause the system to peruse an entire table that contains several hundreds of millions of rows." Wehr adds that the problem is especially serious because, until Version 2 was released, DB2 didn't have a resource manager.

Dan Darneider is project leader for DB2 at Wisconsin Bell, Inc. in Milwaukee. His company uses DB2 as an information warehouse for end-user computing, so ease of use is a primary concern for him. His company is in the process of building

IMS DB2 CICS

BEYOND THE BASICS

THE BASICS

DB2 OVERVIEW
DB2 APPLICATION DESIGN
DB2 APPLICATION PROGRAMMING
DB2 DATA BASE DESIGN
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an information base of its customers that will include such things as the revenue each customer produces, billing information, demographic information, what the customer computer sites look like and how much long-distance telephone service each customer uses.

Although Darneider appreciates the relational aspect of DB2 that has made end-user participation possible, he says, "The biggest challenge we have is to insulate the database against

of resource seconds and DB2 pages. If the search goes over that, the resource governor should purge the request."

Darneider is not only interested in preventing users from asking stupid questions, but he also wants to help users ask intelligent ones. To do this, Darneider is creating an interface shell, based on Focus. This facility will provide a catalog of

add-on information that will contain plain English queries. For example, if the user chooses the field of employee sex, the screen displays a message that there are two values, male and female, and asks which one the user wants to use or exclude.

Darneider chose Focus because he believes it has stronger reiterative powers than SQL and makes turning out complex sta-

tistical reports easier.

But one problem with using a 4GL, according to Darneider, is that it sometimes slows down access time. He says the problem is particularly pronounced when using a language like Focus, which is based on Fortran, or any other 4GL that has a 3GL behind it. His studies have shown that 50% of transaction time on a query is spent transferring rec-

ords from the query set of DB2 back into the language. For that reason, he is looking forward to the increased performance in Version 2.

Associated Insurance Companies has also chosen to work around, instead of through, QMF.

SQL and SAS Institute's SAS/DB2 are the preferred vehi-

Continued on page 56

WHILE LACK of referential integrity has vexed many users, DB2's security features rank high in the complaint list — they are too complex and cumbersome.

stupid questions. The main problem is resource utilization. You can ask the same question in two different ways. If you ask it one way, the answer comes back instantly; if you ask it another way, the answer comes back two days later."

To solve this problem, Darneider used SQL to create views, or paths to data that limit end-user searches. At present, his database has 20 tables and is scheduled to store 20 more in the fall. Because of the size of the database, Darneider has had to discipline himself and his department to provide limited search views, even though that might occasionally give a user some trouble with a report.

"We have found from experience that users almost always choose the largest view, because they'd rather not stop to think about path selection," he says.

Once users have chosen their views, Darneider can set them loose with Information Builders, Inc.'s Focus fourth-generation language (4GL) or SQL or QMF, confident that the number of tables that can be accessed is limited enough not to place an inordinate strain on system resources.

Other options

Gary Kaat, DB2 systems programmer at the Department of Health and Social Services for the state of Wisconsin, sees a less cumbersome solution on the horizon. Kaat is looking to the resource governor in Version 2 to allow him to give his user community of 26 different state agencies more direct access to the database with QMF.

He says, "When we first got QMF, we found that letting end users access the DBMS with it was a drain on our resources. With the resource governor in Version 2, we hope to be able to limit usage to a specific number

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IMS shops migrate cautiously

BY MICHAEL HERMIDA

Response to DB2 is somewhat more measured among weathered IBM IMS veterans than it is among VSAM users. VSAM users are plunging enthusiastically into writing applications with DB2; IMS shops are proceeding more cautiously.

The reason for this differing rate of acceptance is simple. VSAM sites have never before experienced the advantages of database management systems. Features such as data sharing, recovery and a rich data manipulation language, which gain a new measure of capability in data development, management and processing, are all fresh discoveries for them, and DB2 is the package that these sites credit with making it all possible.

IMS users, on the other hand, may appreciate the special qualities of DB2, but they have seen

with this approach. It is also a relatively easy way to introduce DB2 technology to an installation. A limited number of combined IMS-DB2 installations

have gone the full route and decided, on the basis of several successful experiences, that DB2 is the preferred DBMS for application development.

This elevated stature means that all DBMS applications must use DB2, unless justification is provided for using IMS. The sites that have made this level of commitment are likely to be those that are processing low transaction volume applications.

A considerable number of sites, however, are developing new application systems that include both IMS and DB2 pro-

grams. Some of these programs access both DBMSs.

Such installations often see dual-DBMS configuration as an interim step in moving to a total DB2 environment and, for that reason, are particularly concerned with recovery and tuning.

A good number of IMS installations are creating new development using both IMS and

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A limited number of combined IMS-DB2 installations have . . . decided that DB2 is the preferred DBMS for application development.

some of the wonders of DBMSs before. Besides, they also have to worry about how best to employ this new DBMS while also protecting their large investments in IMS applications.

A number of approaches are being tried, which range from using DB2 as an ancillary executive information system to making it the primary environment for development of production applications. As sites position themselves to take full advantage of relational systems, some are being more aggressive than others.

A significant number of IMS-DB2 installations are taking production data from IMS databases and, using a utility or application program, moving the data periodically to DB2 databases. In addition, business data not residing on IMS databases is being placed on DB2 databases. Using one of the many query- and report-writing or decision-support packages on the market, the data is then processed by the business user.

Unlike IMS, relational database systems are well equipped for this environment, and installations are realizing added value

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Hermida is vice-president of Knauer Consulting, a New York DB2 consulting and education firm.

DB2, but separately. The bread-and-butter applications remain under IMS, while administrative, departmental and informational applications are built using DB2, often with TSO as the front end. This combination provides a good, low-risk way to continue supporting the demands of the business with a familiar technology while broadening the scope of supported applications. In this

FEW ORGANIZATIONS WOULD ARGUE against DB2 if the DBMS could support the same transaction work load as IMS at a similar cost.

way, DB2 can be used for requirements previously considered too costly using IMS.

Many users who are employing DB2 in this way say they are

tempted to try traditional production applications under DB2 but feel such a step would be premature.

IMS installations are even

less anxious to convert existing programs to DB2.

The industry investment in IMS applications is tremendous. The larger the investment a

company has made, the greater the experience level of the support staff. This experienced organization is maintaining and enhancing the existing applications. And although the cost of this activity most likely exceeds the cost of similar activities in a DB2 environment, it pales in comparison with the cost of converting these applications to DB2.

Some of these IMS applications, particularly fast-path applications, would not satisfy performance objectives if converted to DB2. Others would very likely cost more per transaction to run under DB2 than they currently do under IMS. This makes a conversion strategy difficult to sell to senior management. Sites considering this conversion now are likely either to be starting a major overhaul of existing applications or to have only a small investment in IMS applications and are unhappy with the staff support and experience level required to build and maintain these applications.

Few organizations would argue against DB2 if the DBMS could support the same transaction work load as IMS at a similar cost. If this were the case, then most installations would move more steadfastly in the DB2 direction.

Migration possibilities

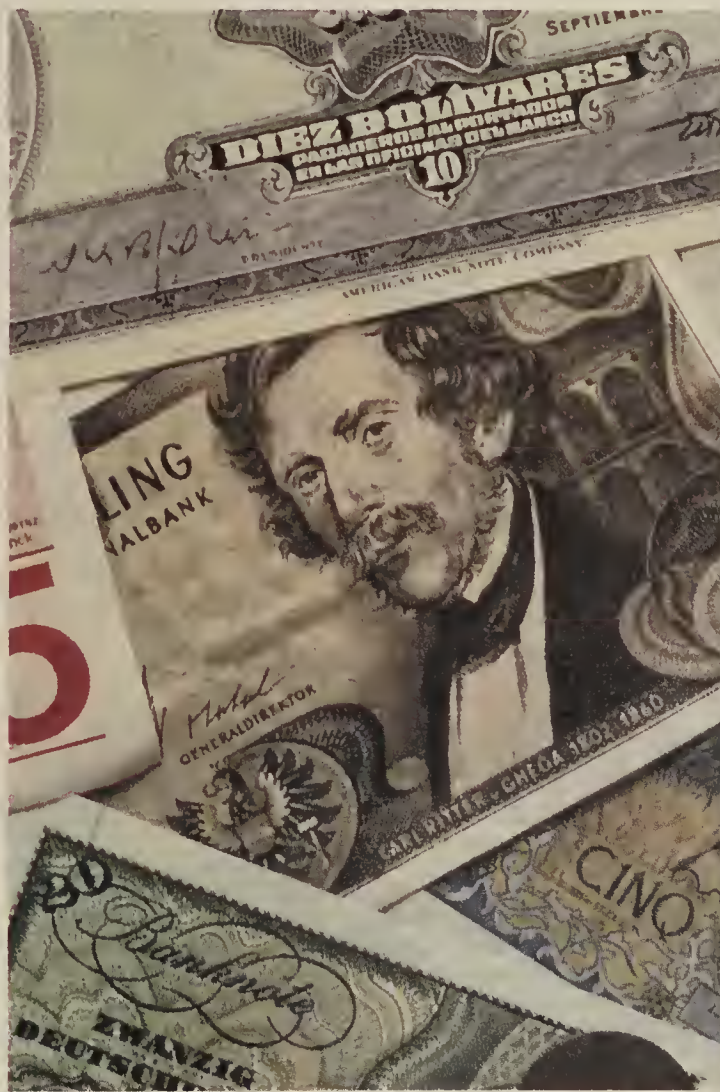
A number of things must occur in order to make a migration away from IMS a possibility. To start with, improvements must be made to DB2 to bring the cost per transaction closer to IMS costs and to enhance support for very high-volume applications. Progress is being made with each release of DB2, and the extent to which DB2 Version 2 accomplishes this is yet to be seen.

Second, an easy-to-use, automated conversion mechanism must exist to assist in and minimize the cost of converting from IMS to DB2. Strides are being made in this area with reverse-engineering technology.

And finally, IMS loyalists who have been successfully managing production systems for years must be convinced that DB2 can compare favorably with IMS in supporting the production environment. To do this, DB2 must develop a track record for supporting large-size production data centers and not just increase its benchmark figures.

It is difficult to let go of a DBMS that has supported critical production applications and business volumes for years at a now-acceptable cost. However, the long-term pressure is undoubtedly to move to one DBMS. Vendors are building application packages that use DB2. Expert systems have their knowledge base managed by DB2. And IBM's distributed database system will be built around DB2 technology. It's just a matter of time. •

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IBM DBMS

FROM PAGE 53

cles for accessing DB2 databases.

Programmers use Cobol with embedded SQL for most application writing, Brown says, but they turn to SAS/DB2 for "quick and dirty" reports. End users use SAS/DB2 for analysis that is not available with SQL. Brown points to such things as SAS/DB2's "IF" statement, which is lacking in QMF, as one of the reasons users find the SAS product more conducive to deep analysis.



Haworth's
Kovatch

But according to Brown, the biggest advantage of SAS/DB2 over QMF is that the former easily connects to a large number of facilities, such as SAS/Report and SAS/Graph. Brown also says SAS/DB2 is more natural for users who are used to IBM systems. "SAS/DB2 is more IBM than IBM's SQL," she says. "For example, SAS has a screen called a data extraction panel that lists all the DB2 columns, one under the other; you type an S for 'select' beside the ones you want. Now that's IBM. People feel comfortable with it. And it generates an SQL statement behind the scenes, so you could probably get by without knowing SQL at all."

Jean Mulcahey, advisory programmer analyst at Monumental Life Insurance Co. in Baltimore, says she looks to a third-party tool — DYL-Interface DB2 from Sterling Software — when she wants something more sophisticated than standard reports. "QMF's reporting capabilities are wonderful only to a point," she explains. "When you want to get into more unusual report formats, like free-form reports with different literals [words] on each line, QMF becomes difficult to manipulate."

Complicated formats can be accommodated in QMF, Mulcahey says, but only through roundabout methods such as using the line wrap or by putting literals in SELECT statements.

DYL-Interface not only makes custom reporting easier, she points out, but it can also return a nonzero code for a hard SQL error. With SQL running QMF in batch, hard errors return zeros. "If you run QMF in batch and you get a hard error in SQL, the return code will be zeros," she says. "But frequently you don't want to continue into the next step of the job."

Mulcahey says she got around that by writing a utility behind batch jobs in QMF

to force a nonzero code — which gives a specific number code, depending on the error, while stopping the program run, even in batch.

But with the new version of DYL-Interface, if the user gets a negative SQL code and has not provided for error han-

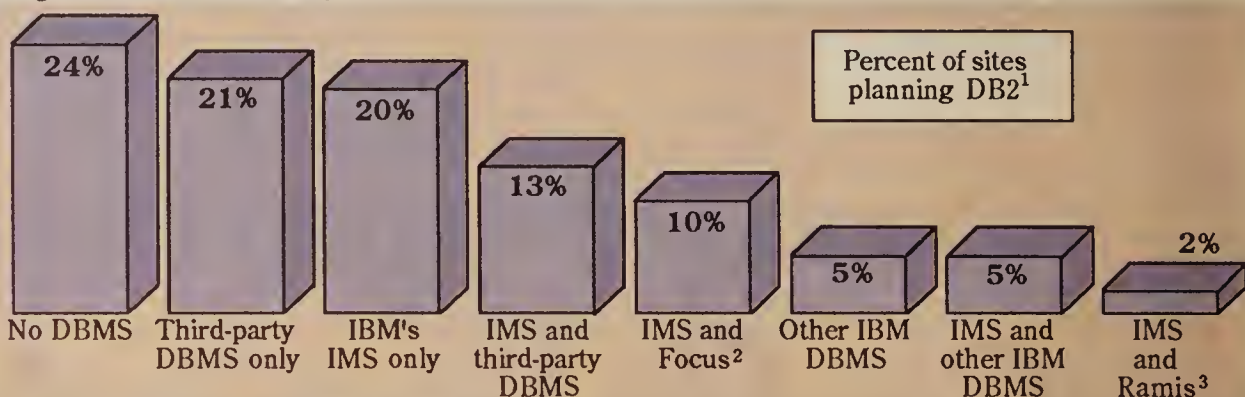
guage front ends such as Alcorp., Inc.'s Intellect as a middle ground.

At Maryland Casualty, executives access DB2 for decision support from one of three levels of complexity.

The first level contains menu-driven screens, which are designed to produce

Building a management team

Almost half of the sites planning IBM DB2 installations either have no DBMS currently in place or are using a non-IBM DBMS only



¹ Base of 1,600 IBM and plug-compatible mainframe sites

² Focus is a product of Information Builders

³ Ramis is a product of On-Line Software International

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dling, the utility will put, for example, a 12 in the condition code, which allows the user a chance to determine what to do with it. "That makes it very convenient," Mulcahey says, because the user can then write code to accommodate the changes.

The comfort factor

Even sites that have no problem with using QMF often turn to third-party editing tools that use commands recognized from previous environments.

For example, Brian Kovatch, senior systems analyst at Haworth, Inc. in Holland, Mich., says that SQL is not difficult but that his department does not have the time to train its programming staff. Therefore, he is using DB/Pro Edit from Updata Software Co. in Holmdel, N.J., since it uses simple ISPF and XEdit commands.

The difficulty of training end users has led some companies to install natural lan-

standard reports but also offer the capability of changing a few parameters. On the most complex level, those who are willing to be trained can use QMF or SQL.

In between, for deep simulation or ad hoc analysis, they use Intellect. "Intellect lets our executives walk before they can run," Maryland Casualty's Saul says.

Bill Wheatley, a staff analyst at Moline, Ill.-based John Deere and Co., which also uses Intellect, says he believes end users are better qualified than programmers to determine if the answer to a query is in the realm of credibility. Therefore, he says he prefers ad hoc reports generated by Intellect to canned reports set up by the company programmers.

According to Wheatley, Intellect occasionally does have a problem misinterpreting questions or coming up with different answers to the same question.

But Wheatley says that while this problem might be slightly more prevalent with

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Intellect, it also exists with SQL.

One advantage that Intellect offers for both Saul and Wheatley is that it paraphrases the query and then optionally displays the SQL code. This aids in eliminating some of the problems with misinterpretation and also helps users get comfortable with SQL.

Many of the performance concerns users have expressed about DB2 in the past are being answered with Version 2. Still, there are a couple of areas in

chased the product, DB2 was still in Version 1.1, and there was no IBM alternative available.

But when Version 1.2 came out, he compared DB2 PM with MICS and decided on the latter because it had more features and was more efficient for constant system monitoring.

Wayne Embry, technical systems analyst at Trans World Air-

lines (TWA) in Kansas City, Mo., also uses MICS DB2 Analysis. His company has three DB2 databases running ad hoc reports and production.

The most important of the three databases, the one that handles TWA's Frequent Traveler mileage points, will soon be handling 40,000 threads a day.

Because of the large volume, Embry says he looks primarily

for exceptions — when the performance or overhead exceeds historical use. He says that while DB2 PM does a fair job of reporting, MICS performs better analyses and does a better job of flagging exceptions.

Questioning tool

According to IBM's Van Den Berg, Version 2 will have a feature called Instrumentation Fa-

cility Interface that will help in performance monitoring by asking DB2 what resources are being used.

For some DB2 installations that have wild swings in use, such as stock markets and airline reservation departments, no performance monitor will fill the bill if it doesn't operate in real time. These users are hoping

Continued on page 64

Programmers use Cobol with embedded SQL for most application writing but turn to SAS/DB2 for "quick and dirty" reports.

which users feel that third-party products are needed to fill in the gaps. One is the spotty performance of the DB2 optimizer. "The optimizer is getting better and better, but it still sometimes slows down performance," Bank of Montreal's Mason says. "The more joins you do, the harder it is for the optimizer to figure it out."

Wisconsin Bell's Darneider agrees. "The optimizer in the present version does sometimes make matters worse," he says. "This is especially true if you have a join of, say, four different tables but are only selecting data off of two of them. The program will want you to resolve the two tables that you're not using." This situation is not because of change in Version 2.

4GL advantage

Strange as it may seem, since 4GLs are often accused of hampering performance, some DB2 users, including Mason, find that certain 4GLs can actually improve the performance of the DBMS because they provide a way of getting around DB2's optimizer, which generates search algorithms.

"We've found that we can use the tuning options on Focus to increase our performance by bypassing the optimizer," Mason explains. For example, when you use a sort application, Focus allows you to put some tables in the core table so you don't have to include them in the join strategy.

One of the items high on DB2 users' wish lists is a better IBM performance monitor. DB2 PM, IBM's current offering, can be used successfully for troubleshooting and for short periods of time, but because it uses a lot of overhead, most users find it inadequate for constant monitoring.

The St. Paul Companies' Pokorny uses MICS from Morino Associates, Inc. When he pur-

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The hunt begins for ready-made uses

BY DANA DAVIS

For the past three years, organizations with an interest in IBM's DB2 have been primarily occupied with evaluating the database management system's performance. Now that many firms are satisfied that DB2 represents a viable next step, they are starting to look around for applications software that can be used in conjunction with the product.

What companies are often finding, however, is that they are one or two steps ahead of software providers.

Davis is a research analyst at Information Data Search, Inc. in Cambridge, Mass.

According to Paul Hessinger, chief technical officer and vice-president of research at the Computer Task Group, Inc., a Buffalo, N.Y., consulting firm, approximately 75 application products are currently available to work with DB2.

However, he says the market will grow considerably in the next couple of years, spreading out to cover the entire application spectrum as DB2 proves itself capable.

Smaller vendors have been quickest to start writing applications to DB2. The larger vendors have been slower to make this move only because of the large

application portfolios they have to deal with. But, Hessinger adds, these vendors are nearing the end of a period where they feel they have to either rebuild or redesign their software to make it work with DB2.

"Many application software vendors are not just stepping up to DB2 from IMS environments but instead are making a two-generational leap directly from VSAM/ISAM to relational databases," Hessinger says.

Hopping on bandwagon

Reynolds Metals Co. in Richmond, Va., only recently began to think in terms of acquiring commercial production applications to use with DB2.

"We've been waiting for DB2 performance to increase," says Fred Baynes, manager of financial systems at Reynolds. "Now we're at the point where we can implement DB2 in our human resources, purchasing, accounts payable and general ledger ar-

eas."

So far, the company has had good luck in connecting with commercial applications. Reynolds is currently implementing the Human Resource Management Systems package from Integral Systems, Inc. for corporate payroll and personnel needs as well as Walker Interactive Systems, Inc.'s Purchasing Accounts Payable and General Ledger Systems package. Both packages, according to Baynes, were installed without any special tailoring.

Some ground still needs to be covered, however, before Reynolds reaches its objective of a complete complement of DB2 applications for its corporate financial operation.

"I'm still looking for fixed assets and capital budget applications," Baynes says.

Gale Fly, president of Dauphin Data Corp. in Mobile, Ala., has found writing his own DB2 applications to be the best solution so far. "We write everything," he says, explaining that his applications cover such areas as stocks and bonds, health claims, payroll, accounts payable and policy loans.

At the moment, Dauphin, the data processing unit of an insurance holding company, relies on IBM's QMF and CSP, but Fly says his company does have plans to install a McCormack & Dodge Corp. general accounting package.

M&D is one of the strongest players in the DB2 applications market, according to Howard Fosdick, a consultant specializing in IBM systems and president of the Midwest DB2 Users Group.

Fosdick estimates that M&D has perhaps two dozen applications, which makes it a standout in a sparse market. "Right now," he says, "there really aren't that many good applications out there that are ready to be bought."

For the time being, Fosdick is attempting to bridge the application gap by using the Focus fourth-generation language and Pansophic Systems, Inc.'s Telon application generator.

All the right ingredients

John Brown, manager of human resource systems at Borg-Warner Chemicals, Inc. in Parkersburg, W. Va., says he looked a long time for a human resource/payroll application that met his needs.

After examining packages from five different companies, Borg-Warner management finally settled on a human resource/payroll application by Integral Systems, which Brown is cur-

rently installing.

"We went with Integral because it had the DB2 application. We've been using a homemade DB2 personnel application for about two years," he explains.

Brown says he believes DB2 applications are becoming more popular because DB2 "lets you

do things in real time, on-line. You just get on the terminal and hit the enter button, and immediately the data is changed." Borg-Warner is already using DB2 for inventory control and order entry.

The company is now looking into commercial manufacturing applications that

could give it a competitive edge, Brown says.

Some users, particularly those in specialized industries, seem content with the current supply of applications.

For example, Fred Ashman, applications manager at Gulf State Toyota, says he doubts his company will look any further for commercial DB2 applications than Lawson Associates, the financial software vendor that has long supplied it with VSAM payroll and accounting software.

Gulf State, a Houston automobile distributorship, is using Lawson's DB2 versions of its General Ledger and Accounts Payable software and plans to upgrade its current Lawson-supplied VSAM Payroll, Accounts Payable and Fixed Assets systems to a DB2 version in the near future.

Ashman says Gulf State's use of commercial applications will probably stop there.

"This is a pretty specific kind of business," he says, "and anything like a basic inventory package would have to be so heavily customized that it wouldn't be worthwhile."

Others, like Shirley Evemeyer, manager of database administration at Fireman's Fund Insurance Co. in San Rafael, Calif., sound more ambivalent. Although Evemeyer says her company has very specialized needs that commercial DB2 applications cannot currently meet, she doesn't dismiss the possibility of being swayed to a purchase.

Recently, Fireman's Fund began looking at accounts payable and accounts receivable software. Evemeyer says writing the applications in-house is the company's last recourse, although Evemeyer says she has not seen any that she wanted to purchase.

"If the application fits our needs and it's commercially available, we'll be out there looking for it," she says. •



Reynolds' Baynes



Dauphin Data's Fly

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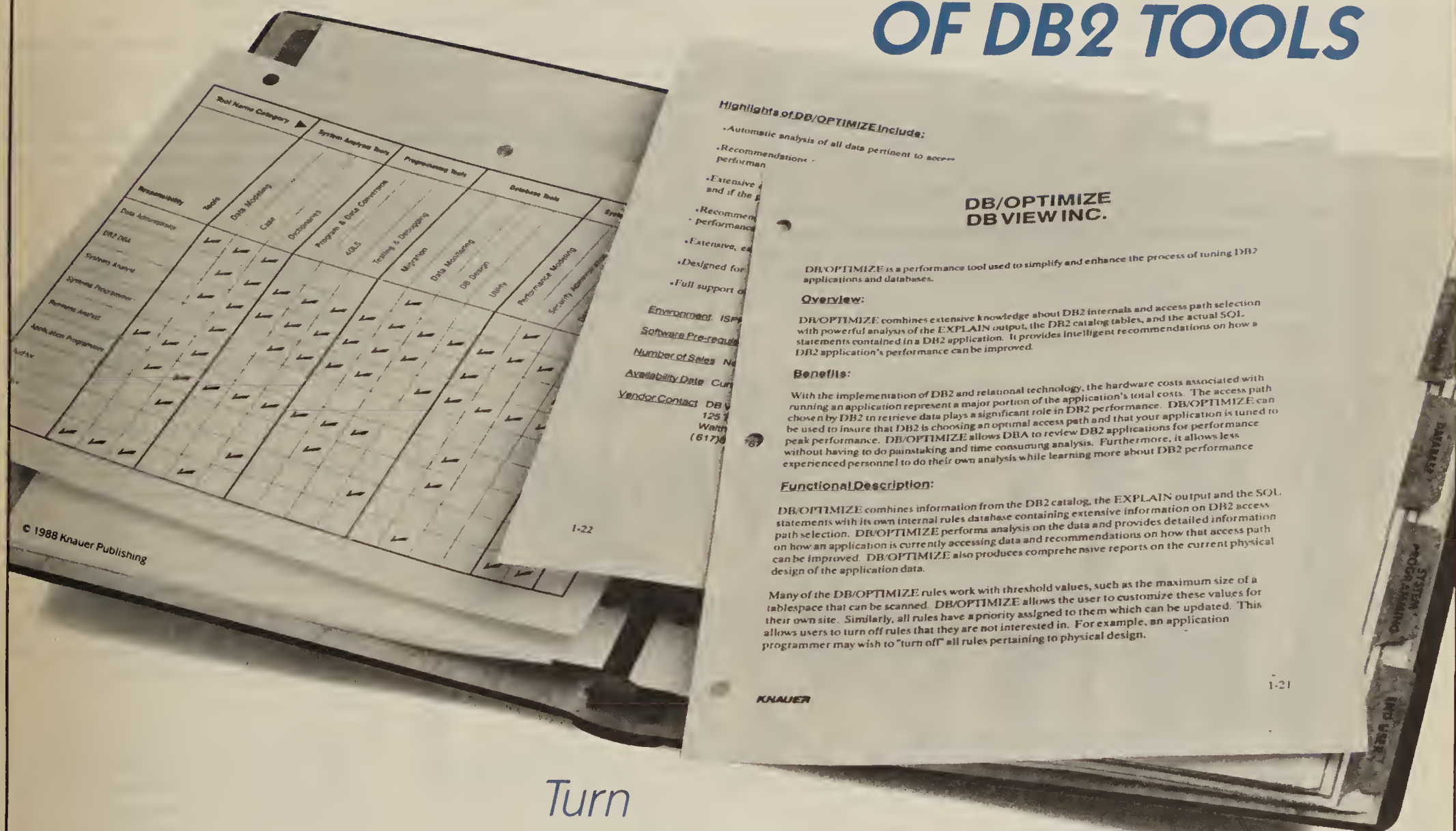


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ASK THE VENDOR

The following questions were solicited from users and conveyed to the vendors for responses.



We are using the virtual disk and file transfer components of Tangram's Arbiter. What products does Tangram offer that will allow us to better access DB2 data from IBM Personal Computers?

Gail Doughtie
Aetna Life and Casualty Co.
Hartford, Conn.

TANGRAM SYSTEMS CORP.: We have two optional Arbiter components that can

interface to DB2. The Arbiter QMF interface allows a QMF user to route query results to a DOS-compatible virtual disk. After finishing a QMF query, a simple command takes users to an Arbiter ISPF screen. Users "fill in the blanks" on this screen by specifying the desired PC format and file name for the data.

The second product that can access DB2 data is Arbiter Peer Services (APS). APS is a programmer's tool kit that allows IBM PCs attached with LU2 and LU1 connections to communicate on a peer-to-peer level with LU6.2 applications

through the host. PC applications for APS can be written in high-level languages such as Cobol, C and Pascal.

Is it possible, using Candle's Omegamon, to identify DB2 tasks that accumulate locks because they do not issue commits frequently enough?

Tony Simmons
Transamerica Information Services
Los Angeles

CANDLE CORP: Using Omegamon for DB2, tasks that are candidates for this kind of difficulty can easily be identified with the COMT exception. This exception allows users to specify a ratio of up-

dates to commits per thread and identify tasks exceeding this ratio. A second exception, LKUS, will identify those tasks that have exceeded a user set percentage of the DB2 NUMLKUS installation value.

The Omegamon for DB2 Locking Conflict Screen analyzes all the locks in DB2 to show which tasks are waiting for locks. In addition, at the thread level, users may view all locks held by that thread that are causing other threads to wait. Finally, the panel "Locks Owned by a Thread" will pinpoint the number, type and level of all locks held by a thread.

How does Must Software's Nomad DB2 interface function in reference to plans in an ad hoc environment? Does it use the Nomad plans bound at installation time or are plans bound dynamically for each user?

Kim Waller
Florida National Bank
Jacksonville, Fla.

MUST SOFTWARE INTERNATIONAL, INC.: The Nomad DB2 interface plan is bound at installation. However, in an ad hoc user environment, predicting the scope of user needs and requests is impossible, so flexibility and efficiency are required. For this reason, user requests are translated into the appropriate SQL statements, which are prepared dynamically by the Nomad DB2 interface.

Using Informix's Report/DB2, we have found that in answer sets containing data derived through the use of arithmetic expressions or DB2 column scalar functions, there is no way to reference those columns with subsequent report steps. Will we see a method for handling this situation in a future release?

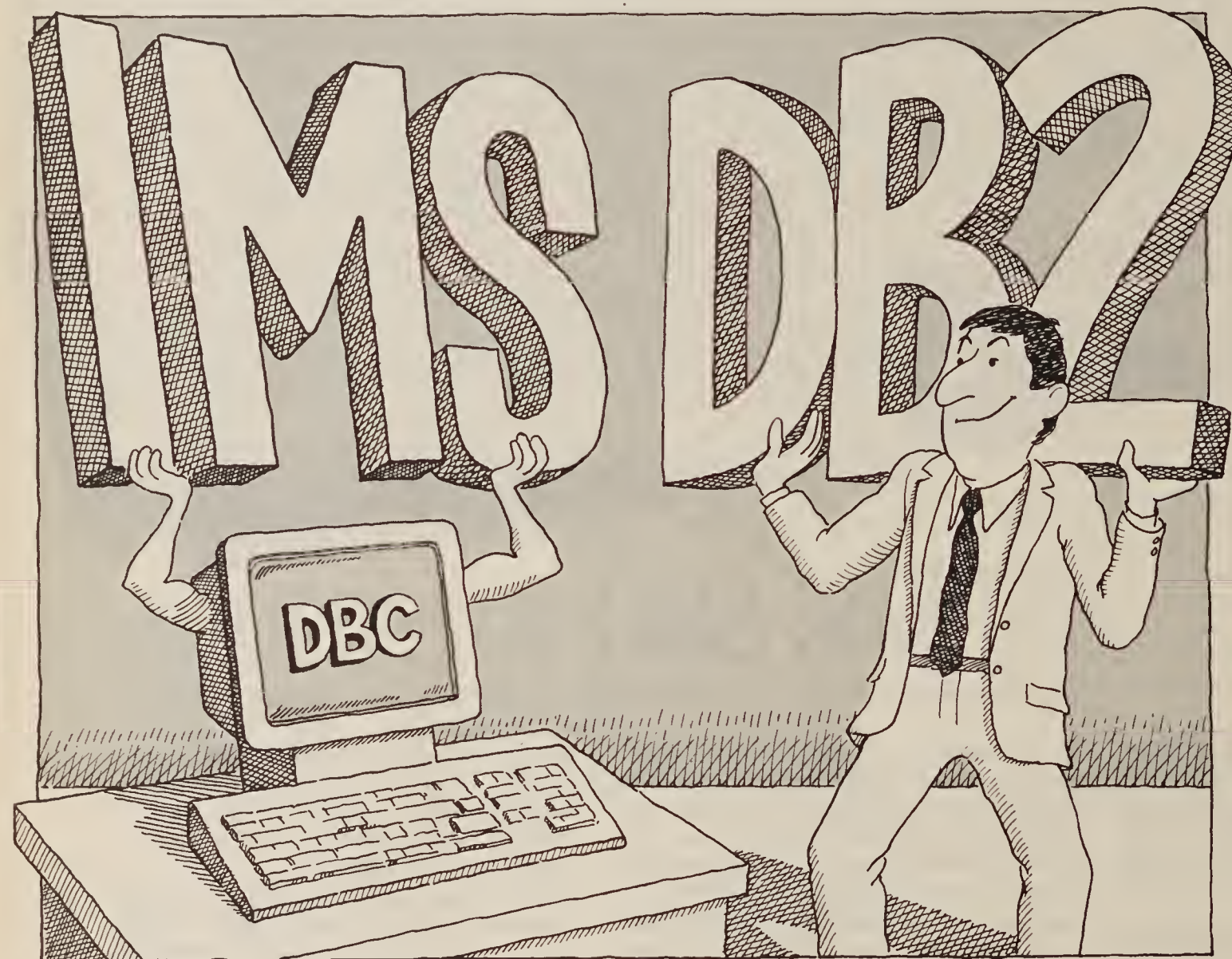
Bennett Hirsch
Tondolea Consulting
Arcata, Calif.

INFORMIX SOFTWARE, INC.: Report/DB2 allows alias names or labels to be used to identify computed columns that are retrieved from DB2. These names can be referenced in subsequent report steps and are stored and can be retrieved from the answer set without returning to the database. An alternative is to use Report/DB2's user-defined variables to specify using columns retrieved from the answer set.

We currently use Sterling Software's DB2 Interface and are interested in finding a product that will allow us to download information from DB2 to our PC. Does Sterling plan to offer any products that will allow this?

Jean Mulchahey
Monumental Life Insurance Co.
Baltimore

STERLING SOFTWARE, INC., DYLA-KOR DIVISION: DYL-Interface currently allows DB2 users to download DB2 data to PCs by writing selected DB2 data to a virtual disk using the Vfile facilities in DYL-270, DYL-280 or DYL-280 II. PC users then access this data with DYL-Vlink, Dylakor's micro-to-mainframe link. Vfile is made available to DYL-Interface users at no cost when they purchase DYL-Vlink. •



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Competitors learn to play on tilted field

BY SCOTT MCLARNON

DB2's impact on the mainframe and departmental database management system markets goes well beyond its 10% share of installed mainframe DBMSs. It changed the ground rules and altered the shape of competition within the DBMS and application development tools business. The independent DBMS vendors are still adjusting.

Between 1986 and 1988, IBM's relational DBMSs — DB2 in the MVS world and SQL/DS for DOS and VM environments — captured 50% of the maturing mainframe DBMS market. IBM's aggressive marketing of DB2 legitimized the relational DBMS model and the use of SQL as the language of choice for manipulating data held in a relational DBMS. This opened the door for new competitors like Oracle Corp. to challenge the old.

In order to grow or, in some instances, simply survive, independent software vendors were forced to rethink their strategies and make significant shifts in their business mix.

The independent players in the mainframe DBMS market can be separated into three strategy groups. First, there is the "old guard." This group is composed of such traditional vendors as Applied Data Research, Inc. (ADR), Computer Corporation of America (CCA), Cincom Systems, Inc., Cullinet Software, Inc. and Software AG of North America, Inc., all of which have been in the mainframe DBMS market since the 1970s. While each player has articulated somewhat similar mainframe DBMS and tools product strategies, each has unique pressures with which to contend.

Then there is the "relational new breed." At present, Oracle is the only relational DBMS player actively marketing an MVS product. The other major relational DBMS player, Relational Technology, Inc., offers Ingres for VM but primarily sells into mid-range, departmental computing environments such as Digital Equipment Corp.'s VAX/VMS and Unix.

Finally, there is the single-player category of "back-end database machine specialist," which belongs to Teradata Corp.

The old guard

The most visible and widely discussed example of the pressure DB2 put on the old guard is seen with Cullinet. Once the leading independent vendor in the mainframe DBMS market, Cullinet flew the highest and fell the farthest of all the traditional vendors. Much has been written about Cullinet's problems and prospects, largely because it is the only independent software vendor that is publicly traded in U.S. stock markets. Nine consecutive losing quarters makes news.

Each of the other traditional mainframe DBMS vendors is either privately held or a subsidiary of a larger or international parent company.

ADR is a subsidiary of Ameritech, although rumors persist that ADR is about to be sold to Computer Associates International, Inc. or another buyer. CCA, a

subsidiary of Toronto-based Crowntek, has nearly finalized the terms of a leveraged management buy-out. Software AG of North America was recently reacquired by Software AG, its West German parent company, to avoid the short-term quarterly profit pressure facing a publicly traded firm.

Cullinet. Recent research conducted by Framingham, Mass.-based International Data Corp. indicates that Cullinet has a strong foundation to work from — a

large customer base that is generally satisfied and likely to remain loyal while the company regroups. Cullinet's IDMS/R mainframe DBMS is strongly positioned as a strategic DBMS within the majority of its accounts.

Support for important standards are important components of Cullinet's strategy to "take the emotion out of the DBMS decision" by defusing the SQL issue, according to Steve Scheidt, Cullinet's vice-president of product marketing.

DB2 "changed the ground rules" of competition within the mainframe DBMS market, he says, by "making SQL support the first hurdle" that a vendor had to clear in the sales cycle.

Cullinet has implemented partial SQL support — using SQL for data retrieval — in Version 10.2 of its IDMS/R database and has promised full SQL support in the database by the second half of next year. As part of its long-term commitment to open-architecture tools, Cullinet will support SQL in future releases of its ADS fourth-generation language and other application development tools.

While this delivered and future level of SQL support appears to have calmed the concerns of senior management within existing IDMS/R accounts, it may not be

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McLarnon is director of the Application Tools Software Program at International Data Corp. in Framingham, Mass. He specializes in DBMS and software tools.

enough to defuse the SQL issue in the general DBMS market. Accordingly, Cullinet has been focusing on DBMS opportunities for which production performance and total cost of ownership are key buying criteria.

Cincom. Cincom has been very aggressive in moving to the relational model with Supra, which is offered in both IBM mainframe and VAX versions.

According to Dave Wood, director of systems software, Cincom was moving to relational DBMS before the market acceptance of DB2 began to force the other traditional independent software vendors in that direction. It did not move as aggressively with SQL support, however, instead choosing to develop more proprietary interfaces. Cincom has delivered SQL in its

Mantis 4GL but not in the Supra database engine, although the company recognizes that as a requirement.

Cincom wants to play a central role in helping large organizations manage their heterogeneous computing environments. A key element in this strategy is its 4GL Mantis, which it positions as an open-architecture tool that works against other

SQL relational DBMSs — including DB2 — and non-SQL DBMSs, across a range of computing platforms.

Cincom's database and tools strategy positions Supra as a "heterogeneous DBMS manager," providing a generic interface to different DBMSs by translating the different SQL dialects common in different vendors' SQL implementations.

ADR. ADR's continuing challenge is SQL compliance, according to Bill Clifford, executive vice-president and chief operating officer at the company.

ADR invested 40 man-years of research and development in its SQL implementation, which involved making changes to the nucleus of its database engine and re-architecting its Datacom/DB DBMS to handle SQL.

An important element of ADR's SQL implementation is the ability to either generate SQL from its Ideal 4GL or write SQL statements within a Cobol program, depending on the customer's requirements.

ADR has also moved to open-

CINCOM'S database and tools strategy positions Supra as a "heterogeneous DBMS manager."

architecture tools, having announced and shipped Ideal for DB2.

Clifford sees two classes of sales opportunities within the mainframe DBMS market this year. The first class is an organization that understands it has a need for relational DBMS technology to run on center and decision support system applications.

The second opportunity, and the one ADR focuses on, is the "prospect who has major business problems and is facing real business pressure" to bring a production application system on-line in a hurry. These prospects put a premium on application development productivity and production performance, areas that Clifford says are ADR's strengths.

The DOS and VM user also represents opportunities for ADR, he says, because SQL/DS is not as robust as DB2. The low-end user tends to be more cost-conscious and is more willing to consider non-IBM solutions.

Software AG. Software AG is the leading independent software vendor of DBMSs for IBM mainframes. Despite the marketing blitz and trade press coverage of relational big guns DB2 and Oracle's Oracle, Software AG's flagship product, Adabase, has quietly built the largest worldwide installed base of any mainframe DBMS offered by an independent software vendor.

A recent trade press advertisement showing New York, London, Paris and Sydney, Australia, and carrying the tag line, "For global business solutions, the world turns to Software AG" tells the story of the company's marketing strategy. With 60% to 70% of its revenue — \$203 million in 1987 — coming from outside the U.S., Software AG is

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Seminar Schedule

City	Date	City	Date	City	Date	City	Date
Toronto	Sept. 7	Washington, D.C.	Sept. 15	Atlanta	Sept. 30	Cincinnati	Oct. 19
Philadelphia	Sept. 9	New York	Sept. 16	Hartford	Oct. 6	Detroit	Oct. 20
Los Angeles	Sept. 13	Chicago	Sept. 20	Raleigh	Oct. 7	Houston	Oct. 25
Dallas	Sept. 14	Cleveland	Sept. 22	St. Louis	Oct. 18	San Francisco	Oct. 26
						Denver	Oct. 27



Walker Interactive Systems

DB2

Data dictionaries

COMPANY	PRODUCT	LANGUAGE WRITTEN IN	COMPATIBLE OPERATING SYSTEMS	WORKS WITH WHAT DBMS	CAN CATALOG DEFINITIONS BE TRANSFERRED INTO DICTIONARY	HOW DOES DICTIONARY EMPLOY SQL	SUPPORTS HOW MANY CATEGORIES OF DATA	SUPPORTS DATA BELONGING TO WHAT MODELS	GENERATES APPLICATIONS	NUMBER OF STANDARD REPORTS	PERMITS AD HOC REPORTING	DEVELOPMENT AND STORAGE OF MACRO INSTRUCTIONS	PROVIDES SECURITY CHECKS	INCLUDES BATCH-MODE FACILITIES	NUMBER OF PRODUCTION LICENSES	PRICE
Alcorp, Inc. (617) 890-8400	Intellect/DB2	C	VM, MVS	SQL/DS, Teradata, Adabas, IDMS, IMS, DL/1	Yes	Uses it for all DB2 data definitions, data manipulation	User defined	Conceptual	Yes	30	Yes	No	Yes	Yes	NP	NP
Brownstone Solutions, Inc. (212) 370-7160	Data Dictionary Solution/DB2 Admin Solutions	Cobol, PL/I, assembler	MVS	None	Yes	Generates SQL optimized with static, dynamic SQL	37	Logical, physical	Yes	37	Yes	Yes	Yes	Yes	20	\$75,000
M. Bryce & Associates, Inc. (213) 786-4567	Pride family of products	ANSI, Cobol	MVS, MVS/XA, VMS	IMS, Adabas, IDMS, Nomad 2, Oracle	No	Generates SQL from data structures	Three	Application logical, physical; enterprise logical, physical	Yes	50	No	No	Yes	Yes	50	\$20,000
Computer Horizons Corp. (201) 984-6900	Migradata	QMS, DB edit (IBM development products)	MVS	None	Yes	Uses it as a tool in development	Infinite	Conceptual, logical, physical	No	210	Yes	No	Yes	Yes	10	\$40,000
DSIMS Corp. (214) 923-2087	DSIMS Data Dictionary	Cobol	MVS, XA	IMS	No	Generates SQL statements	60	Conceptual, logical, physical	No	100+	Yes	No	Yes	Yes	350+	\$34,500
Global Software, Inc. (800) 635-6799	Silas	Cobol, IBM, assembler	ISPF Dialog Manager running under MVS/XA, CMS/VM	Datamanager DBMS ¹	Yes	Uses Datamanager Dictionary definitions to generate SQL for catalog update	Nine	All	No	None	Yes	No	Yes	NA	15	\$35,000
IBM Contact local office	DB/DC Data Dictionary - DB2 Interface	PL/S	MVS/ESA, MVS/XA, MVS/SP	IMS	Yes	None	40 predefined; 200+ user defined	Conceptual, logical, physical	No	10	Yes	No	Yes	Yes	35	NP
	Database Relational Application Directory	PL/I	MVS/ESA, MVS/XA, MVS/SP	SQL/DS in VM	Yes	Uses SQL for all data access	All relational	Logical, physical	No	NP	Yes	Yes	No	Yes	NA	\$14,000
Intex Solutions, Inc. (617) 449-6222	SQL Verify	C	MVS, VM, MVS/XA	SQL/DS	No	Provides direct access to SQL tables	Unlimited	Conceptual, logical, physical	No	One	No	Any	No	Yes	125	NP
Manager Software Products (617) 863-5800	Datamanager	Re-Entrant assembler	MVS, MVS/XA, VM, VS1, VSE	IMS, DL/1, SQL, IDMS, Adabas, Total, System 2000	Yes	Generates SQL statements from dictionary	Unlimited	Conceptual, logical, physical	Yes	None	Yes	Yes	Yes	Yes	1,300+	\$26,000+
On-Line Software International, Inc. (201) 592-0009	Casepac	Cobol, PL/I	MVS/XA	IMS	Yes	Uses static, dynamic SQL through dictionary access module	27 standard; unlimited user defined	Conceptual, logical, physical	Yes	27	Yes	No	Yes	Yes	NP	\$200,000
Oracle Corp. (800) Oracle-1	Case + Dictionary	C	MVS, VM, MS-DOS, AOS/VS, VMS, Sun Unix	Oracle	Yes	Generates SQL definition statements, uses SQL to access data in dictionary	Seven	Conceptual, logical	Yes	60	Yes	No	Yes	No	600	NP
Software AG of North America, Inc. (800) 843-9534	Predict	Natural 2	DOS/VSE, VSE/SP2, VSE/SP3, MVS, MVS/XA, VM/CMS, VMS	Adabas, IMS, DL/1	Yes	Uses static, dynamic SQL	18	Conceptual, logical, physical	Yes	60	Yes	No	Yes	Yes	3,000	\$45,000-\$5,000
Technology Information Products Corp. (617) 246-7720	TIP Repository	Cobol	VM/CMS, TSO	IMS, DMS 1100, IDS II	Yes	Generates DB2 tables	450	NP	No	Nine	No	Yes	Yes	Yes	100	\$40,000

¹Database management system

The companies included in this chart responded to a recent telephone survey conducted by *Computerworld*. When a vendor is unable to provide specific information about its product, the abbreviation NP (not provided) is used. When a question does not apply to a vendor's product, the abbreviation NA (not applicable) is used. Further product information is available from the vendors.

clearly the most international of the major DBMS independents.

That revenue mix is both a blessing and a curse, however. Software AG's strength in Western Europe — \$60 million to \$70 million yearly — has insulated it from the intense competitive pressures within the U.S. market but has also contributed to its low-profile image in the U.S.

Adabase shipment levels into the worldwide IBM mainframe DBMS market have remained flat at 300 licenses per year during the last two years. But Software AG also expanded into the competitive VAX DBMS market in 1986 and plans further moves into the Wang Laboratories, Inc. VS and Unix-based departmental systems arenas.

Along with expanding the base of Adabase platforms, Software AG is broadening its tool offerings into several hot markets, such as the following:

- Computer-aided software engineering (CASE), with its Natural Engineering series.

- Expert systems shells, with Natural Expert.
- Network and systems management, with Natural Process.

The company also generates more than 10% of its revenue from developing custom solutions. In addition to using custom-developed applications to leverage sales of products such as Adabase, Natural and Predict, it will use its professional services organization to develop showcase applications utilizing current and future products.

The company's professional services organization selects opportunities in a careful, calculated way. The intent is to build an application portfolio and collective skill set that may ultimately serve as the foundation for a foray into selected application markets.

CCA. CCA is another low-profile independent DBMS vendor seeking to raise market awareness of its Model 204 DBMS and associated application development tools.

Although CCA reports that

"75% of its new business is from commercial markets," the company is better known as a research and development lab, conducting sponsored research and custom software development, particularly for the U.S. Department of Defense and other federal agencies.

CCA has positioned its Model 204 as a high-end, performance-oriented DBMS to address customer applications involving complex unpredictable inquiries and updates, large complex databases and a great variety of responses. CCA will increasingly focus on several key vertical markets in which it has "a reasonable presence," according to Peter Junker, vice-president of marketing and sales.

A boon to business

In contrast to the traditional IBM mainframe DBMS vendors who have lost market share to DB2, Oracle says it has benefited from the DB2 movement.

Although more than 50% of Oracle's revenue comes from

the numerous mid-range, departmental computing environments it has ported to, including VAX/VMS and Unix platforms, there is little doubt it was helped by IBM's endorsement of relational technology and SQL.

Oracle currently has a limited presence in the MVS world. Its penetration into IBM mainframe shops has generally been in departmental and information center applications running on mid-range platforms.

Peter Tierney, Oracle's vice-president of marketing, says he believes Oracle Version 6 will increase the company's mainframe market penetration. Oracle's recent announcement of the performance-oriented Version 6 product was positioned directly against DB2 in the MVS world.

Oracle's DB2 competitive strategy can be described as "complement, compete and coexist." It will attempt to compete with DB2 more and more often for mainframe database business. But even if DB2 wins out as the mainframe DBMS of

choice, Oracle will still maintain an edge by selling front-end application development tools that complement DB2. Finally, Oracle will coexist with DB2 by continuing to sell VAX, Unix or PC Oracle DBMS and related tools.

Early insight

Ben Barnes, director of marketing at Teradata, also says that DB2 positively affected Teradata's business. Founded in 1979, Teradata spent a lot of its early years in "missionary selling" — selling the concept of the relational model before it even started to sell the Teradata solution. DB2 legitimized relational technology and the use of SQL, allowing Teradata to instead focus on selling its high-performance, back-end database machine. The results have been impressive. For the fiscal year ending June 30, Teradata's revenue was \$89.5 million, up 91% from \$47 million the previous year.

Teradata's principal product is the DBC/1012 family of database computers, a special-

Debugging tools

COMPANY	PRODUCT	ENVIRONMENT PRODUCT RUNS IN	DOES PRODUCT UTILIZE DB2's ADDRESS SPACE	COMPATIBLE WITH WHAT OPERATING SYSTEM	RUNS ON WHAT IBM HARDWARE	ARE SOURCE CODE CHANGES REQUIRED FOR USE	IS FACILITY FOR SAVING DATA USED IN ORIGINAL REPORT	PERFORMS REGRESSION TESTING	PERMITS TESTING OF ON-LINE ACTIVITIES IN BATCH MODE	TYPES OF ERROR DESCRIPTION INFORMATION GENERATED	TYPES OF OUTPUT GENERATED	IS INTERACTION PERMITTED IN OUTPUT MODE	INTEGRATES WITH WHAT OTHER SOFTWARE	NUMBER OF PRODUCTION LICENSES ISSUED	PRICE
Application Development Systems, Inc. (800) 358-3048	Xpediter family	MVS, TSO, IMS, CICS	NP	XA	MVS, MVS/XA, VM/CMS	No	No	Yes	Yes	NP	Hard copy, screen, script	Full-screen interactive or batch mode	No	1,000	From \$19,000
Applied Data Research, Inc. (201) 874-9000	Roscoe DB2 Interface	MVS, Roscoe	Yes	XA	MVS-supported IBM 370 mainframes	No	Yes	Yes	No	Merges, formatted SQL	Screen, data set containing results of interactive SQL requests, Roscoe library members containing results of DB2 commands	View results from interactive SQL requests, DB2 command executions	No	NA	\$70,400
Business Software Technology, Inc. (508) 870-1900	Endevor DB2	MVS, TSO, IMS, CICS	No	ESA, XA, SP	IBM 370	No	NA	Yes	Yes	Application plan discrepancy validation	Hard copy, screen	No	Endevor C1	15	\$22,500
Candle Corp. (213) 207-1400	Omegamon for DB2	MVS, TSO, VTAM, ISPF	No	XA	IBM mainframes	No	No	No	No	Commit rate high; get page/read I/O ratio high; number of page-locks owned high	Hard copy, screen	Can select specific areas of analysis	No	70	\$30,000
Compuware Corp. (313) 540-0400	CICS Abend-Aid for DB2	MVS, CICS, MVS/XA	No	MVS, MVS/XA	IBM mainframes or compatibles	No	NP	No	No	Complete analysis of all DSNB (IBM) abends and non-zero SQL codes	Hard copy, screen	Select report for viewing, protecting print, view on-line directory of abend activities, protect from deletion	No	NP	NP
	Abend-AID for DB2	MVS, TSO, IMS	No	MVS, MVS/XA	IBM mainframes or compatibles	No	No	No	No	Complete analysis of all DSNB abends and non-zero SQL codes	Hard copy, screen	Select report for viewing, deletions, protecting print, view on-line directory of abend activities, protect from deletions	No	NP	NP
Database Utility Group, Inc. (206) 878-1001	Insight/DB2	MVS, TSO	No	ESA, XA	IBM 4300, 3080, 3090 series	No	Yes	No	Yes	NA	Hard copy, screen, machine-readable files	Yes	No	NP	\$30,000
IBM Contact local office	CICS/VS on-line Test/Debug II	CICS	No	ESA, XA	All that support MVS	No	No	No	No	Modification of storage variables	Screen	Stops at specific address in application	CICS	NP	\$2,625 one-time charge; \$112/month
	Batch terminal simulator II BTSII	TSO	No	ESA, XA	All that support MVS	No	No	Yes	Yes	All data access requests and results	Hard copy, screen	No	IMS, ADF II	NP	\$246/month
	Cross System Product	TSO	No	ESA, XA, MVS/SP	All that support MVS	No	Yes	No	No	Trace logical flow; displays; screens; internal data bases	Hard copy, screen	Stop, review, change	No	NP	\$12,000-\$41,000
	OS PL/I Optimizer Compiler	MVS, TSO	No	ESA, XA	All that support MVS	No	No	No	No	Traces logic, displays, data values	Screen	Stop, selected statements, data item changes and/or conditions	BTS II for testing IMS/PC	NP	\$800/month
	Database Migration Aid Utility	TSO	No	ESA, XA	All that support MVS	No	Yes	No	Yes	DB2 error messages	Tape, SPUI	Yes	SPUI	NP	NP
Pansophic Systems, Inc. (800) 323-7335	XPF/Cobol	TSO, CICS	No	XA	IBM 370, 3000, 4300 or compatibles running MVS/SP or MVS/XA	No	Yes	Yes	No	Statement number executing trace table, main storage	Hard copy, screen	Conditional breakpoint setting, review of program variables	Panvalet	200	\$22,500-\$48,250
Systems Design & Development Corp. (303) 449-3634	DCATS	MVS, TSO, IMS, VM, CICS	No	ESA, XA	IBM PC, PS/2, System/1; DEC; Tandem; Hewlett-Packard; Stratus; Honeywell Bull; NCR	No	No	Yes	Yes	Field level error detection reporting as well as comparison of matches within a range, within a set or hex matches	Hard copy, screen	Stop, signal step, cancel execution	No	NP	\$75,000

The companies included in this chart responded to a recent telephone survey conducted by *Computerworld*. When a vendor is unable to provide specific information about its product, the abbreviation NP (not provided) is used. When a question does not apply to a vendor's product, the abbreviation NA (not applicable) is used. Further product information is available from the vendors.

Competitors

FROM PREVIOUS PAGE

purpose computer designed for high-performance database processing.

While DBC/1012 does compete with DB2, Teradata positions its database computer toward the higher end decision-support applications market, what Barnes refers to as "large decision support." The complex queries in this type of processing typically involve numerous SQL statements running against very large databases requiring multiple gigabytes of direct-access storage.

According to Barnes, DB2 either lacks the capacity to handle many of these larger applications or cannot deliver the price/performance required to cost-justify the application. Accordingly, Teradata frequently coexists with DB2 at the large Fortune 1,000-type firms it targets. In fact, the company estimates that 50% of its customer base has installed DB2.

Teradata does not offer its own tools.

It has, however, established relationships with several DBMS and tools vendors to have their tools work with the Teradata relational DBMS.

A recently announced relationship with Aion Corp. expanded the third-party tools offering to include an expert system shell. Teradata will likely expand its tools portfolio through relationships with CASE vendors during 1988 and 1989.

The movement to relational technology and SQL swept over the mainframe and departmental DBMS market like a wave, and Oracle and Teradata are riding this wave.

The traditional DBMS vendors, however, have been overtaken by it. The stronger swimmers in this latter group will be buoyed by aggressive investment in open-architecture tools and SQL-based relational database engines. Other traditional vendors are floundering, weighed down by their investment in older technology but with a sufficient installed base to keep their heads above water — at least until another wave hits. •

IBM DBMS

CONTINUED FROM PAGE 57

that IBM will move in that direction soon, but according to Shaku Atre, president of Atre/Computer Assistance in Rye, N.Y., that isn't likely in the near future. "When I asked IBM if they were planning to come up with a real-time monitor, they asked if I wanted to develop one," she says. "IBM is interested in making the engine stronger and is content to let software developers come up with the auxiliary products."

IBM is depending heavily on outside assistance in getting organizations moved onto DB2 from other DBMSs.

Porting applications and data is difficult and can be particularly so in a migration to DB2 since the applications that users want to migrate often have deep roots in the hierarchical structure.

As IBM's Van Den Berg points out, "A number of vendors are coming out with products that facilitate that process."

Atre says she feels that since IBM's

goal is to make one-third of its revenue from software and one-third of that from DBMS, it will continue to make advances in DB2. In future versions, she sees an active, integrated data dictionary; better facilities for performance monitoring and tuning; distributed DBMS capabilities; and support for engineering and scientific work, including arrays.

But Atre adds that DB2 will always have holes that are filled by third-party vendors. "IBM realizes that it depends on third-party support to make DB2 applicable for many different installations. So they have no intention of encroaching on these vendors' territories. It's impossible to think about DB2 without also thinking of the products that support it," she says.

While each enhancement to DB2 gives the system wider appeal, the database is not, and probably never will be, a one-vendor solution. IBM is aware of its debt to third-party vendors — and so are users. It's an interdependence that is likely to last for the near future. •

Report writers

COMPANY	PRODUCT	COMPATIBLE WITH WHAT OPERATING SYSTEMS	RUNS IN WHAT ENVIRONMENT	USES WHAT QUERY LANGUAGE	USES PROCEDURAL OR NONPROCEDURAL STATEMENTS	PERMITS USE OF WHAT SPECIALIZED FORMATS	PERMITS DEFINITION OF FUNCTIONAL VARIABLES	CONVERTS REPORT DATA INTO GRAPHS	PERFORMS REPORTING AS WELL AS QUERY SORTS	REPAGINATES AT ALL LEVELS OF CONTROL BREAK	INTEGRATES WITH WHAT OTHER SOFTWARE	METHOD OF INTERFACE TO DB2	PERMITS REPORT GENERATION ON A MICRO	NUMBER OF PRODUCTION LICENSES ISSUED	PRICE
Alcorp, Inc. (617) 890-8400	Intellect/DB2	VM, MVS	MVS, TSO, CICS	Natural, English requests	Mixture	NP	Yes	Yes	Yes	Yes	SQL, IBM's PGF ¹ graphics	Generates SQL code	No	NP	NP
Decision Technology, Inc. (609) 987-8950	Decision Analyzer	MVS, DOS/VSE	MVS, TSO, IMS, CICS	Intelligent menus	NA	NP	Yes	Yes	Yes	Yes	On-Down for download to PC	Static, dynamic calls under CICS, TSO, batch	Yes	NP	\$12,000-\$28,500
Dynasoft Corp. (312) 696-4440	Dynasoft Integrated Software Package	VM/CMS, MVS, TSO	MVS, TSO	SQL	Mixture	20+ display formats; date, time, bar graph, numeric	Yes	Yes	Yes	Yes	IBM GDDM ² , proprietary	Internal interface	No	NP	\$2,000-\$9,000
IBM Contact local office	Application System	MVS/ESA, MVS/XA, MVS/SP	TSO	SQL	Procedural	Open formatting	Yes	Yes	Yes	Yes	IBM office products	SQL	No	NP	\$22,000-\$117,600
	Query Management Facility	MVS/ESA, MVS/XA, MVS/SP	TSO	SQL	Mixture	User defined	No	Yes	No	Yes	CSP, 3GL programs	SQL statements	Yes	NP	\$45,000-\$97,520
Information Builders, Inc. (212) 736-4433	Focus	VM, MVS	TSO, CICS	SQL, proprietary	Mixture	User defined	Yes	Yes	Yes	Yes	Integrates with most mainframe databases through interface product	Proprietary	Yes	250	\$50,000-\$100,000
Informix Software, Inc. (415) 322-4100	Report/DB2	MVS	MVS	SQL	Mixture	Any custom formats	Yes	No	No	Yes	Informix 4GL, Informix SQL for Unix, OS/2, DOS, VMS	Attach Facilities	Yes	NP	\$1,000 per month for one-year license fee
I.P. Sharp Associates Ltd. (416) 364-5361	Viewpoint	MVS	Proprietary	Proprietary	Nonprocedural	NP	NP	Yes	NP	Yes	No	Dynamic SQL	No	NP	NP
Management Science America, Inc. (404) 239-2000	Information Expert Query	MVS, VSE	MVS/IMS, MVS/CICS	Information Expert 4GL, SQL	Mixture	Date, time	Yes	No	Yes	Yes	MSA applications	Attach Facilities	No	No	NP
	Information Expert Reporting	MVS, VSE	MVS/IMS, MVS/CICS	Information Expert 4GL, SQL	Mixture	Date, time	Yes	No	Yes	Yes	MSA applications	Attach Facilities	No	No	NP
McCormack & Dodge Corp. (508) 655-8200	Millennium: Systems Development Tool	MVS, OS	CICS	SQL with optional end-user SQL generator	Mixture	End-user on-line formatting capabilities	Yes	No	Yes	Yes	Any Millennium-generated application	CICS attach	No	25	NP
Micro Decisionware, Inc. (303) 443-2706	PC/SQL-Link	MVS, VM, VMS	MVS, TSO, CICS	Menu-generated SQL	Nonprocedural	DIF, IXP, RBS&F, SYLK, WKS, WP, DBF, others	Yes	Yes	Yes	No	Lotus: R-Base; Dbase II, III, IV; Paradox; Wordperfect; Microsoft Word	Dynamic SQL	Yes	90 host, 5,000 PC	\$5,000-\$33,000 host; \$300-\$500 PC
Must Software International, Inc. (203) 845-5000	DB2 Nomad	MVS/XA, MVS/370	MVS, TSO	Nomad commands translated into SQL, DB2 statements	Mixture	Supports all formats, including name, text, date, time, fixed arrays, varying arrays, time series	Yes	Yes	Yes	Yes	Nomad	Call Attach Facility	Yes	76	\$50,000-\$85,000
On-Line Software International, Inc. (201) 592-0009	Ramis Information System	OS, DOS/VSE, VSE/SP2.1, MVS/XA, MVS/TSO, VM/CMS	MVS/SP, MVS/XA, TSO, IMS, CICS, Batch	Proprietary 4GL	Mixture	Preprinted forms, letters, labels, tables, line, bar, point-to-point graphs, histograms, pie charts	Yes	Yes	Yes	Yes	Interfaces to a Ramis DBMS; relational views; micro-to-mainframe communication; data maintenance; facilities; graphics; financial analysis	Call Attach Facility	Yes	1,500	\$49,000-\$126,000
Oracle Corp. (800) Oracle-1	SQL*Reportwriter	VAX, Sun (IBM mainframes, PCs by year's end)	No native operating system	SQL	Nonprocedural	Data, text formats	Yes	No	Yes	Yes	Yes	Oracle's SQL connect product	Yes	200	From \$1,200 on Microvax
Pansophic Systems, Inc. (800) 323-7335	Easytrieve Plus	MVS, DOS/VSE, OS/VS, VM/CMS	MVS, TSO, CICS	Proprietary	Mixture	NP	No	No	Yes	Yes	IMS, DL/1, SQL/DS, IDMS/R, Total, Datacom/DB, Supra	SQL-like statement level interface	Yes	6,000	\$20,000-\$60,000
Platinum Technology, Inc. (800) 442-6861	Platinum Report Facility	MVS, MVS/XA, MVS/ESA	MVS, TSO, CICS	Full SQL with simple menu creation of SQL	Nonprocedural	Column, block, freeform, label, letter, matrix	Yes	Yes	Yes	Yes	IBM's ICU	Native, specifically created for DB2	No	16	\$29,000
Relational Architects, Inc. (212) 966-0010	RLX	MVS/XA	MVS, TSO	SQL	Procedural	ISPF panels	Yes	No	Yes	Yes	ISPF Dialog manager, TSO CLIST language	Embedded SQL	No	NP	\$12,000
SAS Institute, Inc. (919)467-8000	SAS System	OS/MVS, VM/CMS, VSE/VMS, AOS/VS, Primos, HP/OX, PC-DOS	MVS, TSO	SQL	Mixture	NP	Yes	Yes	Yes	Yes	All SAS modules	SAS/DB2	Yes	13,000	NP
Software AG of North America, Inc. (800) 843-9534	Natural 2	VSE, SP2, SP3, MVS, XA, VM, VMS	TSO, IMS/DC, CICS, CMS, VMS, Batch	Natural	Mixture	User defined	Yes	Yes	Yes	Yes	Software AG product line	SQL	Yes	3,000	\$50,000-\$250,000
	Supernatural	VSE, SP2, SP3, MVS, XA, VM, VMS	TSO, IMS/DC, CICS, CMS, Complete, VMS, Batch	Natural	Mixture	User defined	Yes	Yes	Yes	Yes	Software AG product line	SQL	Yes	3,000	\$50,000-\$250,000
Specialized Software International (800) 522-7899	Tables/DB2	MVS	IMS, CICS	SQL	Nonprocedural	None	No	No	Yes	No	Tables/DB2	Dynamic SQL	No	NP	\$18,000+
Sterling Software, Inc., Answer Systems Division (818) 716-1616	Answer/PR	MVS, DOS/VSE, DOS/VSE/SP	TSO, IMS, CICS, CMS	Proprietary, Natural	User defined	Includes preprinted forms	Yes	No	Yes	Yes	Any software	Dynamic SQL	No	785	\$12,000-\$56,250
	Answer/2	MVS, DOS/VSE, DOS/VSE/SP	TSO, CMS	None	Nonprocedural	User defined; includes preprinted forms	Yes	Yes	Yes	Yes	Any software	Dynamic SQL	No	761	\$13,800-\$68,750
Sterling Software, Inc., Dylakor Division (818) 718-8877	DYL-IQ Express	MVS, SP, XA, ESA	MVS/CICS, IMS/DC, TSO, MVS batch	Native language	Nonprocedural	User defined	Yes	No	Yes	No	No	Call Attach or TSO Attach Facility	No	More than 200	\$20,000-\$60,000
	DYL-280 II Relational	MVS, VSE, VM	MVS batch, MVS, TSO, VSE, VM/CMS, CICS	Proprietary 4GL with embedded SQL statements	Nonprocedural	Date, user defined	Yes	Yes	Yes	Yes	DYL-On-line, DYL-Vlink, DYL-Audit, Tempuslink, IDMS/R	Call Attach or TSO Attach Facility	No	1,000-1,500	\$25,000-\$40,000
Walker Interactive Systems (415) 495-8811	Strategic Management Systems	MVS, DOS/VSE, VM/CMS, OS, MVS/XA, VS1	MVS, IMS, CICS	Strategic query	Mixture	NP	Yes	No	Yes	Yes	NP	Software bridge, static SQL statements	Yes	NP	\$150,000

¹Presentation Graphic Facility ²Graphical Data Display Manager

The companies included in this chart responded to a recent telephone survey conducted by *Computerworld*. When a vendor is unable to provide specific information about its product, the abbreviation NP (not provided) is used. When a question does not apply to a vendor's product, the abbreviation NA (not applicable) is used. Further product information is available from the vendors.

AUGUST 29, 1988

COMPUTERWORLD

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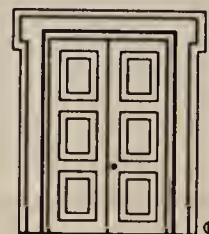
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Application or misapplication?

The old mistakes of the DP world spread insidiously into end-user computing

BY JOHN LEBER

Personal computers gave rise to a whole new category of corporate tools for efficiency. They also created a whole new category of corporate waste.

First, you've got a new generation of middle-management staff, unfamiliar with software and programming development, producing inefficient applications.

Then you've got traditional MIS departments and an explosively growing end-user community that seem to be at perpetual loggerheads.

What you've really got is a massive redundancy of effort and multiplication of cost, as well as a negative public image for office automation.

In order to effectively market a solution to a problem, the symptoms and costs need to be clearly identified and quantified. Today's misapplication of PC software can be broken loosely into the following areas:

- Database deluge.
- Spreadsheet malpractice.
- Report overload.
- Keypunch factor.

Database deluge

To minimize wasted time and money, one must guard against database deluge — the accumulation of redundant, trivial or inappropriate data in computerized systems. Database deluge can be avoided in large measure if you take the following precautions:

- Require a data dictionary. Many redundant fields, such as start date, hire date and service date, can be eliminated with a data dictionary. Not only do multiple fields increase work, cost and user-annoyance levels, they also generate errors and subsequent user mistrust.
- Beware the big field. A 400-character work-history field is useless. It is useful only for secretaries told to update the personnel records from the files. If a field or attribute

Leber is a writer and consultant based in Peoria, Ill.



MARK BRAUGHT

- **Just when you thought it was safe . . .**
- **Four problem areas**
- **Warning signs of waste and overload**

is something that may need to be used in a sorting operation, a matching operation or — worst of all — an index, smaller is definitely better.

• Use it or lose it. All too often, a microcomputer database exists in parallel with the real hard-copy system, which is the first choice for answering queries and the last word on factual information.

If the primary time use of a system is system update, it's time to either abandon the automated system altogether or improve it so the system performs the required work.

Examine the keypunching required, as you should with all systems. If a purchase order system requires typing in full name, address and routine information for a vendor each time — instead of a vendor number only — suggest a new product.

A corporate data dictionary can reduce redundancy, increase portability and promote systems integration — all at the cost of making a decision.

Whether data is in Lotus Development Corp.'s 1-2-3, Ashton-Tate Corp.'s Dbase III Plus or IBM's DB2, the number of characters allowed in a last name needs to be defined.

Many database products for microcomputers highlight ease of application development; great report facilities; and high field numbers per table, pages per form or tables per database. The high cost of filling and maintaining a large database once it is made is seldom mentioned.

Most high-end PC databases can increase disk storage requirements by factors between three and five times more than a flat file system or word processor. If no subtotals, no advanced

sorting and no exporting is required, no database is required. No matter how finely tuned it is, a Porsche is the wrong tool for spring plowing.

Spreadsheet malpractice

Consider if an application is of finite size, as in a project cost estimate or bid proposal, or if it is an integrated part of operations with both growth and historical records requirements. If the latter is true, a spreadsheet is probably not a good place for the information. Digging out data from a June 1986 spreadsheet is not very cost-effective in August 1988.

Determine the average length of time a user uses the spreadsheet on-line vs. the time

A CORPORATE data dictionary can reduce redundancy, increase portability and promote systems integration — all at the cost of making a decision.

required to start the program and load the spreadsheet. Take a walk through the office. Wall-posted instructions like "Start 1-2-3. Type slash, file, retrieve and choose budget. Then go out for lunch" can be a clear clue to spreadsheet misapplication. In gross cases, a five-minute update job on a standard PC with a slow disk can take 15 seconds to start the spreadsheet program and 17 minutes to load the spreadsheet.

Extensive and unnecessary

use of macros is another common tendency. Frequently, the built-in capabilities of the spreadsheet have not been utilized, with macros doing a great number of things that macros don't need to do. The following situations indicate macro over-use:

- If a job takes longer to accomplish with an automated spreadsheet than it would with a word processor and a handheld calculator.
- If personnel frequently complain of "losing everything" because they executed a menu option at the wrong time.
- If a very small menu-driven spreadsheet occupies 100K to 150K bytes.

A simple cash-ledger system implemented with a heavily automated spreadsheet can use 250K bytes of disk space per file. The same data can create a small database with instant access to data as far back in time as the system goes.

As a rule of thumb, if the data to be manipulated and stored is of a recurring nature, where total growth may exceed 300K bytes, a database — despite its slower start-up — is the best approach to avoid fragmented and hard-to-maintain systems.

Report overload

The ease with which PCs can generate miles of reports with all columns in line, all headings perfect and all totals correct creates a tremendous temptation to impress upper management with voluminous reporting. Don't do it.

A site manager at an off-shore production facility once made the point very well. He produced a photograph of a three-inch-thick binder of reports that had been manually prepared during one calendar year. He then produced another photograph of four full binders of reports — covering the same data — most of which had been computer generated in the subsequent year. Such volumetric analysis can be a good measure of report overload.

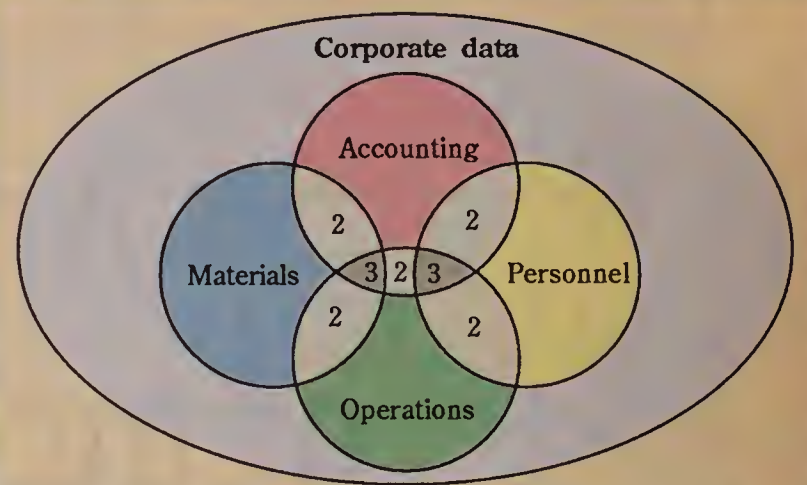
Again, common sense is the best cure, but the following simple guidelines can help:

- If it needs to be signed, print it out. If it doesn't, don't.
- Help end users tailor all reports to their purpose. Use a graphical presentation for a report on trend analysis, not a 20-column by 50-row matrix of numbers. Compressed mode may be the biggest bane to corporate eyesight since CRTs.
- Compare computer-generated reports with manually prepared reports. Is any additional data critical? More to the point, does this additional information save or potentially save money? If not, don't print it.

The fact that a report is easily and quickly generated does not reduce the cost of the paper, ribbons and machine time to pro-

Database deluge

Redundancy plagues PC-based databases in corporations, where two or three files or fields may overlap among departments



CW CHART

duce it or the hourly cost for management to read it.

When calculating costs, determine the single-copy report cost and the cost of making multiple copies. Include a factor for the cost of executive time to receive and read a report. Then compare that cost figure with possible savings or increased earnings generated by including the additional data in the printed report.

Keypunch factor

Multiple keypunching can increase automation costs far above initial estimates. Trace, for example, the life of a sample document such as a field-office requisition generating a purchase order, which in turn generates a materials shipping order, material received report and a host of related documents.

The field-office requisition is entered into a flat file PC database product that is used locally to track requisitions. The requisition number, amount and account code are keyed into a

spreadsheet for ongoing cost analysis.

Operations keeps a record on a word processor of outstanding orders for their own information. Only a hard copy is forwarded for processing.

Each of the above requires parts of the original information. In the very worst case, each document is prepared in longhand, typed, signed and forwarded.

The bottom line of automation is this: Any integrated system should aim at no more than two transcriptions — the original longhand and one in keypunch.

The keypunch factor can be defined as the number of times information is entered by keyboard — either to data storage by computer or directly to paper by typewriter — after initially keying the information into the system. Separate and unconnected systems can generate keypunch factors as high as 10 or more.

Identifying and correcting high keypunch factors must

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cross departmental lines. If data is exported from a mini or mainframe as hard copy and requested data manipulations or updating is received not as written notes on the original hard copy but rather as a printout from some PC program, the conclusion should be obvious.

The hard-copy information leaving the mainframe has been keyed into a remote-site PC, manipulated, printed out and then shipped back to the mainframe to be entered yet again. One end user in a remote site requested a copy of an inventory, which had to be translated to another language, on diskette. The data processing department initially told him, "That's not possible, and besides, it would take hundreds of diskettes."

The end user persisted, and the inven-

IF OFFICE AUTOMATION translates into missed lunches and late nights at the office, it isn't working. While that sounds obvious, it implies a mistake in either decision or implementation and, as such, it can be hard to pin down.

tory arrived — on two diskettes. The end user then used a word processor with Search and Replace ability to work with the inventory and therefore drastically cut the work and keypunching required.

Clues to over-keypunching

A breakdown of secretarial time can be a good yardstick for measuring keypunching levels. If many high-priced secretarial

hours are spent feeding PCs the output of corporate or site minis and mainframes, you've got a losing situation. Last, a dead giveaway of a high keypunch factor is data entry being done from a computer printout.

The solutions are simple if the problem is readily identified. Networking, phone link-up or even mailing disks or tapes are all easy but are foreign to most self-taught

end users.

An in-house consultant or assistance from an MIS department, if marketed correctly, can turn devils into angels. The best rule is the simplest: "Never type anything more than once."

Executive expenditure

Software and systems costs should always be evaluated against the cost of executive time. It is very easy for self-taught teachers to overestimate how quickly a neophyte can pick up concepts, particularly when the teacher has great interest and the novice doesn't.

Middle management can cost \$200 to \$500 a day. That is a high price to pay for someone to sit scratching his head and muttering at a recalcitrant program. Always put dollars on a learning curve.

If office automation translates into missed lunches and late nights at the office, it isn't working.

While that sounds obvious, it implies a mistake in either decision or implementation and, as such, it can be hard to pin down.

There is also great danger for middle-management personnel promoted for doing a good job — perhaps by automating their own desk — to follow human nature and do the same "good job" at a higher level by automating everyone else's desk. That almost guarantees the occurrence of all the aforementioned problems.

The following two solutions complement each other:

- Teaching and assisting a new generation of middle management to produce efficient applications.
- Integration among traditional MIS departments and an explosively growing end-user community.

Both of these solutions can be addressed by marketing a package of training, cooperation and assistance.

However, traditional values for MIS do not necessarily market well. Increased efficiency, or doing things faster or better, does not necessarily mean more revenue or less cost. For in-house marketing, those bottom-line issues are really the only two points that sell.

The growing pool of end users knows the company — it's theirs. An aggressive corporate policy that deals with unstructured end-user computing as an undeveloped resource can turn around the loss, marry field experience with professional computing skill and take a holistic, non-divisive approach to corporate computing.

The sunny side

The bright side to these problems is that until now, if an MIS or DP department chose to stay remote, then end users on PCs did their thing and MIS did theirs; the only thing the company lost was money on misapplied PC tools.

Networking is changing all that. End users are logging into mainframes and minis, creating the potential for critical information corruption or loss.

Trends in networking simply increase the stakes. The company that takes a corporate approach can tap the most valuable experience in the world — its own employees — to help design systems and expand information processing to its logical conclusion — a company operating at the speed of light.

The company that doesn't may well be rekeying last year's budget figures while the competition is pricing on the basis of next year's projections. •

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TAKING CHARGE

James Connolly

MIS heads in the sand



Ask a dozen MIS executives to list 10 of their key concerns and you are likely to find that the top

three problems relate to stretching their resources, keeping good employees and staying in touch with the user community.

Almost all of the managers will save at least one slot on their Top 10 Headaches List for disaster planning and recovery. Those concerns can be summed up as, "What do I do when the lights go out, the waters rise, the building burns and the terrorist strikes?"

So why is it that so many surveys of MIS shops reveal that a certain percentage not only don't have a commercial or reciprocal hot-site arrangement, but list "none" as their disaster recovery strategy? One recent study by the McWains Chelsea, Inc. data processing services firm in Morristown, N.J., showed that 25 out of 120 have absolutely no recovery site strategy.

Similar studies by other organizations show surprising numbers of large sites — large in this case including ones with multiple IBM 3090 mainframes — running without uninterruptible power supplies. Of course, some regions of the nation have reliable power sources, but no electric companies can guaran-

Continued on page 72

Dump Grand Design

Report urges feds to rethink systems approach

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C.— The federal government's penchant for huge MIS projects — the so-called Grand Design approach — is risky and often leads to costly failures, according to a report by the General Services Administration (GSA).

The problem is that large system designs are not easily changed once commitments have been made, but technology and the government's policies, politics and personnel are constantly changing, the report concluded.

Large-scale MIS projects in the private sector are susceptible to the same problems, the GSA noted, but the situation is worse for the government because of the federal budget process, contracting regulations and political pressures.

"Under the best of circumstances, the approach is risky. A

Grand Design can work, but the odds are against it," said the pre-publication copy of the report by the GSA's Office of Innovative Office Systems.

Instead, the GSA report calls for a modular, incremental approach to systems development to reduce the project to manageable proportions.

Federal 'fad'

A Grand Design system refers to a large, complex computer application in which all possible requirements are combined into a single system procurement. The recent "fad" among federal agencies has been to turn such huge projects over to systems integrators, according to the report.

Grand Design projects, according to the GSA, are so big and costly that they attract inordinate oversight from Congress and auditors, require huge budgets and annual justification, attract bid protests from losing vendors and usually take three years to plan and 10 years to implement.

During the 10-year period, agency management may change three or four times, presidential administrations change and requirements and technology change. The resulting system, if it is ever completed, may be obsolete, according to the report.

"Year after year, federal managers follow the Grand Design approach despite the poor track record," the report said. It is second nature to federal managers and contractors and has been taught in universities as the Systems Approach for more than 20 years, according to the researchers.

Continued on page 74

Barron sets strategic course for Xerox MIS

BY JAMES CONNOLLY
CW STAFF

Patricia "Tosh" Barron knows she isn't alone. The director of corporate information management at Xerox Corp. sees a trend toward MIS executives with backgrounds similar to hers.

No, they weren't all born on Christmas in wartime England.

No, not all had dance careers cut short by knee injuries.

And, no, not all passed up a summer job running a Mozart program to do management consulting in Tanzania.

However, half of her classmates at a Harvard University MIS executive program last year brought nontechnical experience into ranking MIS posts.

Barron sees companies looking first for business talent in their top computer executives. She took over her job last summer after the post stood vacant during a two-year search for a candidate with strong technical skills and an understanding of business strategy.

Barron says of Xerox, "They don't want technology for technology's sake. They want technology to support a business strategy." She says Xerox found candidates with technical backgrounds but not with a balance of technical and business skills.

She says she was offered the job because of her experience in many functional areas, including marketing, operational finance and plant operations and because she understood the firm's strategy. Prior to her appointment, Barron was vice-president and Eastern region manager for Xerox's U.S. Marketing Group.

Those were her most recent in a global range of experiences.

PROFILE

Patricia Barron



Position: Director of corporate information management, Xerox Corp.

Mission: To ensure that Xerox gets maximum benefit from its MIS budget while preparing its high-potential MIS personnel for the challenges of the 1990s.

Born in 1942 in Oxford, England, Barron earned a degree in dance. Bad knees ended her dance career, and she moved into arts administration.

"I looked at the arts administration courses and they were all soft, which explained why arts organizations were badly managed. So I figured I would go to a solid business program and adapt what I learned for an arts administration job," she recalls, sitting in her Xerox headquarters office, from which she can see deer straying from Stamford, Conn., woodlands in the early morning.

Faced with a new choice, this one between the Mozart program or going to Tanzania for consultant McKinsey & Co., she opted for intriguing Africa.

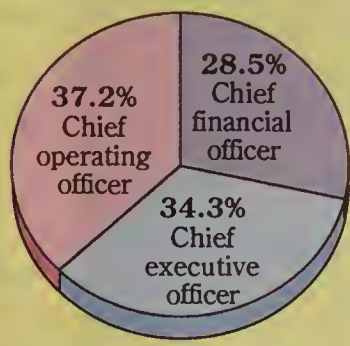
"The president had inherited

Continued on page 73

Data View

A higher authority
Most health care CIOs surveyed
said they no longer report to
the CFO

PERCENT OF RESPONDENTS*



*Base of 102 respondents

SOURCE: HEIDRICK AND STRUGGLES, INC.
CW CHART

MANAGERS ON THE MOVE

Miller to get word out on Bacardi

Bacardi Imports, Inc. in Miami recently hired David A. Miller as director of management information systems of the U.S. distributor of Bacardi rum and other beverages.

Miller, formerly the director of data processing at Pennsylvania Gas & Water Co., will direct all computer and information activities at Bacardi Imports, with a focus on increasing the organization's ability to provide superior consumer, retailer and distributor information, according to Bacardi Imports Assistant

Vice-President William P. Anderson.

A native of Zanesville, Ohio, Miller graduated from Franklin University and earned an MBA at Capital University. He also served as manager of information systems at Columbus & Southern Ohio Electric Co.

Lawrence D. Walters has been named vice-president of information services at Sara Lee Bakery in Deerfield, Ill., with responsibility for all systems development and computer ser-

vices for the worldwide bakery organization.

Walters previously worked as director of management information services at Beatrice U.S. Food Corp. and director of computer services at Dart & Kraft, Inc. A graduate of Ohio University and the holder of an MBA degree from Marquette University, Walters is a member of the Society for Information Management and the Grocery Manufacturers of America.

Helen M. Wood has been ap-



Sara Lee's Walters

pointed director of the Office of Satellite Data Processing and Distribution at the National Oceanic and Atmospheric Administration (NOAA).

In her previous post as deputy director of the National Bureau of Standards' Institute for Computer Sciences and Technology, Wood directed research projects for computer networking, security, data management and automation technology. Her office at NOAA is responsible for a space- and earth-based system encompassing the world's largest flow of real-time environmental data gathered by NOAA weather satellites.

Wood has been active in associations such as the Computer Society of the Institute of Electrical and Electronics Engineers, Inc. and is the sole candidate for

Continued on page 72

Managers

CONTINUED FROM PAGE 71

president-elect of that society. She is a graduate of the University of Maryland and holds a master of science degree in computer science from American University.

Smith Kline Beckman Corp. recently named John R. Lego as its director of worldwide research and development-shared systems at its pharmaceutical subsidiary Smith Kline & French Laboratories.

Lego, who joined the company in 1980, had most recently been associate director of research and development at

Smith Kline & French. Lego, 39, previously was a biomedical computer engineer with ICI Americas and is a graduate of Drexel University. He will be responsible for directing the company's scientific computing, office automation, telephone and communication services.

Charlene A. Woody, assistant director of the Library of Congress Science and Technology Division, has been named science administrator of that division. She holds responsibility for heading a team that will redefine the mission



Smith Kline & French's Lego

and organization of the division so it can be on par with national library science and technology efforts in other major companies.

Woody, who joined the library's information systems office in 1971, oversaw the development of key programs in the Technical Systems Office and Automated Systems Office.

She holds a bachelor of science degree in mathematics from Hampton Institute, a master's degree in public administration from American University and a law degree from George Washington Law School.

STATE OF THE A T.



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The Z-248 is also standard with 1MB RAM and is expandable up to 6MB without using an expansion slot. However, four open expansion slots can artfully handle future growth. Configurations of 5.25", 3.5" floppy or 40, 80 and 160MB hard disks truly expand all your options.

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C A L E N D A R

SEPT. 11-17

Conference On Computing In Civil Engineering and Symposium On Expert Systems In Civil Engineering. Atlanta, Sept. 11-13 — Contact: Thomas O. Barnwell Jr., Agenda Chairman, Sixth Conference on Computing In Civil Engineering, Environmental Research Laboratory, US EPA, College Station Road, Athens, Ga. 30613.

Midwest DB-DC Users Group Annual Meeting. Grand Rapids, Mich., Sept. 11-13 — Contact: Midwest DB-DC Users Group, c/o Loretta T. Kobler, Arthur Andersen & Co., Rm. 532, 9 W. Washington, Chicago, Ill. 60602.

National Computer Graphics Association Mapping & Geographic Information Systems '88. Orlando, Fla., Sept. 12-15 — Contact: National Computer Graphics Association, Suite 200, 2722 Merrilee Drive, Fairfax, Va. 22031.

FOC/LAN 88, International Fiber-Optic Communications and Local-Area Networks Exposition. Atlanta, Sept. 12-16 — Contact: Information Gatekeepers, 214 Harvard Ave., Boston, Mass. 02134.

Data Storage Forum. San Jose, Calif., Sept. 13-15 — Contact: Cartledge & Associates, Suite 202, 3097 Moorpark Ave., San Jose, Calif. 95128.

International Conference and Exposition of Machine Perception Technology. Chicago, Sept. 13-15 — Contact: Expocon Management Associates, 3695 Post Road, Southport, Conn. 06490.

Ashton-Tate Developer Conference. Los Angeles, Sept. 13-16 — Contact: Ashton-Tate, 20101 Hamilton Ave., Torrance, Calif. 90502.

Value-Added Market Data Conference. New York, Sept. 14 — Contact: Waters Information Services, P.O. Box 2248, Binghamton, N.Y. 13902.

EFT Association CAN/AM Conference. Toronto, Sept. 14-16 — Contact: Electronic Funds Transfer Association, Suite 1000, 1726 M St., N.W., Washington, D.C. 20036.

Spectrum '88. Phoenix, Sept. 14-16 — Contact: Graphic Communications Association, Suite 604, 1730 N. Lynn St., Arlington, Va. 22209.

Voice-Interactive Computer Conferences and Exhibitions. San Francisco, Sept. 14-16. — Contact: Media Dimensions, 42 E. 23rd St., New York, N.Y. 10010.

Seybold Desktop Publishing Conference. Santa Clara, Calif., Sept. 14-17 — Contact: Seybold Seminars, 6922 Wildlife Road, Malibu, Calif. 90265.

Connolly

CONTINUED FROM PAGE 71

tee 100% reliability. Therefore, one has to ask whether the managers running large sites without protection are being negligent or whether what they are doing with tens of millions of dollars worth of equipment is so unimportant to their firms that they can afford a crash.

Similar questions can be asked about subjects such as physical security, password security, disk backup, tape vaults and test runs of recovery plans. Too many managers admit shortcomings in these areas, and too many of these managers are gambling with their firms' futures and their own personal futures.

Any managers who rate disaster recovery planning, power protection, security or any related topic in their top 10 concerns really should take a closer look at their preparations to date and keep any deficiencies high on their priority list as 1989's budget time approaches.

Connolly is *Computerworld's* senior editor, management.

Barron

CONTINUED FROM PAGE 71

the good old British colonial structure of the capital at the coast and all the raw materials being exported out. His real issues were how to develop the country. We worked on a reorganization so that we pushed decisions down closer to the local level," she says.

"Ironically, here at Xerox we are doing much the same thing. The focus of our business should be the customer. Therefore, the focus of our effort has been in the districts," she adds. From an MIS standpoint, that means Xerox placed its 3,000 systems personnel under a structure that has most of them reporting within business units, with Barron holding oversight responsibility.

Barron, who earned an MBA at Harvard, stayed with McKinsey until joining Xerox in 1978. At the time, most of her experience had been in international business, and Xerox put her to work in its newest sector by naming her director of its China Project when China was first soliciting Western businesses.

China syndrome

Someone at Xerox recommended Barron as "an expert on China." In reality, Barron's expertise had come from a three-week visit to China. "I was more expert than anyone else, but I didn't really know my ass from my elbow," adds Barron, who went on to spend three years on the project, first drafting a diplomatic response to China's inquiries and eventually working out deals such as a joint venture agreement. But China was half a world removed from the corporate growth path.

"In Xerox, not unlike other companies, making a career in China is not the way to get higher in the organization. The way in Xerox historically has been through the U.S. organization. I realized I had to be here," she says. She returned to the U.S., which has been home for 21 years, and moved up through the marketing group.

Barron observes that she is one of the first Xerox managers to benefit from an emphasis on moving executives among varied business areas. "This is a beginning. Historically we've developed people functionally, and we are trying to break out of that mold. There is a greater emphasis now being put on growing general managers," she says.

Barron emphasizes that a general business background fits her job because that job is predominantly strategic.

Prior to her arrival, Xerox had built a good technical foundation within its MIS operations, she says, but notes that she oversees those operations. "The president wants to know if we are spending almost \$450 million a year on systems, 'Am I getting a good return?' He also wants to know if we have 3,000 people in the function, 'Are we developing them, are we giving them the right experiences?'"

A manager who reports directly to Barron describes her as fairly aggressive but sensitive. "She's very organized and very much hands-on. She gets involved with issues, but the key is to understand what to get involved with and what to delegate to others. I think she understands that," said Ken Soha, director of Xerox executive and office information systems.

Soha says Barron's style belies her marketing background. "She's not really what you would call a flashy manager in terms of getting up on a soapbox. She is a

roll-up-your-sleeves-and-get-it-done-everyday person, and when the year is done you say, 'Hey, we really accomplished something,'" Soha says. He adds that Barron's key accomplishments have been to bring a business point of view and customer orientation to the systems group and to build relationships among the systems organizations and the business groups.

Her goals include a continued focus on human resources: She has established a personnel advisory committee made up of senior MIS managers and has hired a personnel specialist for MIS. "We are beginning to put in a process of reviewing high potential at lower levels in the company, so we identify who the high-potential people are and ensure that there is a develop-

ment plan in place for them," she says.

Barron also wants to build systems that support integration by cutting across business unit boundaries, and she is focusing on leveraging technology for competitive advantage.

Xerox, in part because it is a systems vendor, has done a good job of leveraging technology, Barron says, pointing to the fact that the company has more than 22,000 workstations — primarily based on the Xerox Star technology that was the foundation for the Apple Computer, Inc. Macintosh — linked by Ethernet, another Xerox-developed technology.

She says Xerox is driven to do more than electronic mail with its network and points to her icon-filled screen as a key executive support tool. She says she expects

expert systems to play a major role in future efforts to gain strategic advantage and notes that Xerox already uses expert systems in areas such as remote diagnostics and product design.

Barron says that in her first year on the job she has learned a lot but that there remains a good deal more to learn. She lists as one of her strengths the ability to ask questions and recognize which people are giving her informed answers.

Looking to where she will go now, she says, "I don't view this as a short-term kind of job. That is not to say I'm not career-minded. I am, but I really think I am learning so much in this job, and I know I've got a lot to contribute in this job, so that is not a question I am asking myself right now after just a year."



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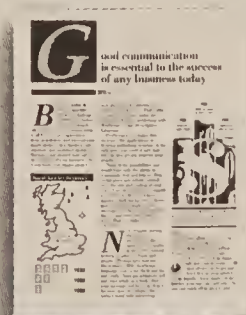
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INSTRUMENTS**

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Grand Design

CONTINUED FROM PAGE 71

The report did not name any specific examples of Grand Design failures, but the bibliography cited audits of the Patent and Trademark Office's automation project, the Securities and Exchange Commission's electronic filing and retrieval project

and other troubled programs.

The study, based in part on interviews with 21 experts in federal computer systems, said the biggest problem with Grand Design projects is the lack of top management support, which can be fatal.

"Many top managers stay in their jobs for only about two years, which is not long enough to be other than a disruption on

long-term, complex systems," the report said. Furthermore, responsibility for Grand Design projects is often placed too low in the organization, with managers who are not decisive or lack clout.

Meet it or beat it

Congress and political appointees, who want to see fast results while they are in office, often set

unrealistically tight schedules that can lead to failure. Projects that fall too far behind schedule can lose their political and financial support and risk being shut down, the study added.

The report recommends a modular approach, based on a skeleton version of a master plan, with one small system being built at a time. However, architectural, data and software

standards must be established to provide connectivity and software portability throughout the years, GSA said.

GSA cited the following advantages of the modular approach:

- Funding for the small modules will be easier to obtain, especially if the modules show tangible results at regular intervals.
- Problems and deficiencies can be corrected "as you go," because they are easier to spot and fix at the module level than at the Grand Design level.
- Smaller modules can be processed by smaller computers, which may imply the need to decentralize computing resources.
- Modules can be structured so that even if some are canceled, the already installed ones will still be valuable.

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Design flaws

In a preface to its report, the GSA describes the background of Grand Design systems:

"Since the mid-1960s the Systems Approach has been the principal methodology used to identify requirements in computer-based application systems. This approach was developed to provide a way to identify and coordinate all related requirements and to wrap them up into a single bundle for planning, oversight, design and implementation.

"The key words are 'all related requirements wrapped up in a single bundle.' The problem is that, at some level, everything is related. Suppose, for example, that an agency determines that it needs a new payroll system. The Systems Approach will uncover requirements related to the personnel inventory, position inventory and the skills inventory systems. Soon, the agency is led into considering not just a new payroll system but a combined and broadly defined payroll and human resources system. Often an important title is assigned, such as 'Human Resources Management for the year 2000.'

"So what had been a difficult, but doable, challenge to develop a new payroll system becomes a very complex, and perhaps not doable, Grand Design aggregation of what could be four separate systems."

COMPUTER INDUSTRY

INDUSTRY INSIGHT

Peter Bartolik

Save a nickel, waste a buck



Am I crazy, or has the rebound of America's industrial might turned into sour news?

Seems like just two years ago, all our problems were pegged to the surrender of U.S. industry in the face of overwhelming foreign superiority, be it in the area of quality, market acumen or currency.

Now, with U.S. factories on a roll with month after month of increased output, the nervous nellys on Wall Street, Capitol Hill and in the Federal Reserve are backpedaling, trying to put a damper on things.

So once again, high-tech entrepreneurs, industrialists and would-be home owners are watching credit rates tick up monthly as the investment and banking communities try to anticipate inflation, caring little in the process about stifling innovation.

That looks on the surface like a noble idea. But doesn't it seem just a little bit odd that the free-market mavens appear to be interested only in freedom for the paper wealth industry that Wall Street has become — while increasingly ready and willing to place artificial limits on the industrial base that cre-

Continued on page 79

MIS vet to head Apple in U.S.

Loren gets nod in dramatic reorganization; four divisions created

BY JULIE PITTA
CW STAFF

CUPERTINO, Calif. — Dramatically polishing its image as a major vendor to the corporate computing world, Apple Computer, Inc. last week gave an MIS veteran — an Apple newcomer without sales or marketing experience — a prominent new role as head of Apple's U.S. division.

Allan Z. Loren, who signed on as Apple's chief MIS executive last fall, was appointed president of Apple USA over veteran Apple executives like former Chief Operating Officer Delbert Yocam and Senior Vice-President of U.S. Sales and Marketing Charles Boesenberg. Loren, 50, formerly headed the data pro-

cessing division of insurance giant Cigna Corp.

Loren's appointment was part of Apple's third reorganization this year, a dramatic restructuring that divides the company into four separate divisions.

Although hired to head Apple's MIS department, Loren spent little time in that capacity. Last spring, he was appointed vice-president of integrated services, a new group established to service large corporate customers.

Apple Vice-President of Hu-



Allan Z. Loren

man Resources Kevin Sullivan said Loren is ideal to head Apple USA. "Although he's never sold or marketed systems, Allan Loren has always been a customer," Sullivan explained. "If you want an organization that understands customers, then he's

ideal."

In addition to Apple USA, the new divisions are the following:

• **Apple Products**, which is being guided by its one-time senior vice-president of product devel-

Continued on page 78

T1 unit sale cuts 160 Microm jobs

BY PATRICIA KEEFE
CW STAFF

SIMI VALLEY, Calif. — Anticipating the sale of T1 equipment subsidiary Microm Digital, Microm Systems, Inc. recently laid off 160 employees out of its total corporate work force of about 1,355.

Microm Digital is being sold to Telematics International, Inc. in Fort Lauderdale, Fla., which has agreed to pay \$9.65 million in cash for the T1 maker's stock.

The transaction was to have been completed Friday. Like Microm Systems, Telematics is a supplier of communications equipment, particularly wide-area networking products.

More than half of the Microm Systems employees receiving pink slips were in sales, according to Karen Winner, the firm's communications manager.

The reduction in sales personnel was directly attributed to the sale of Microm Digital, formerly known as Spectrum Digital. "With that sale, we no longer require the same level of sales support," Winner said.

Stay tuned

Winner declined to detail the other areas affected by the cuts. However, she did say it is likely that there will be further personnel reductions once Microm becomes a smaller, privately held entity.

Currently a publicly traded company, Microm earlier this month accepted an offer of about \$301 million from MS1 Acquisition Corp., a subsidiary of a New York-based financial organization, Odyssey Partners.

If the sale goes through — as it is expected to by mid-September — Microm will revert to privately held status. At that point, Winner suggested, certain functions, such as investor relations, will no longer be required by the firm.

Specific information about future restructuring will probably be released in mid-September, Winner said.

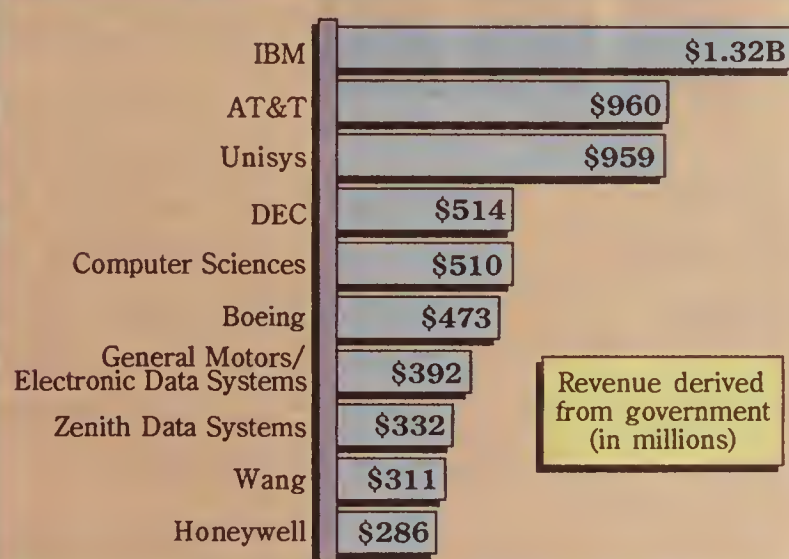
Inside

- Smith to succeed Bolger as Bell Atlantic CEO. Page 78.
- Silicon Valley toxins group puts several high-tech firms in hall of shame. Page 79.

Data View

Big bucks in big government

Top information technology vendors to U.S. government, fiscal 1987



SOURCE: FEDERAL SOURCES, INC.
CW CHART

NAS revamps presidency

SANTA CLARA, Calif. — The office of the president of National Advanced Systems (NAS) no longer contains just one president. In an unusual move last week, NAS announced that President David Martin will be joined by two vice-presidents; the group will make up the Office of the President.

Martin, who has been president for the last five years, has been joined by David Turner and Robert Howells, executive vice-presidents of product management and marketing and sales, respectively.

Continued on page 80

X marks the spot for Carrico's new venture

BY PATRICIA KEEFE
and KATHY CHIN LEONG
CW STAFF

PALO ALTO, Calif. — William Carrico has wasted little time in charting the course of his new company, Network Computing Devices, Inc. (NCD). Last week, the Bridge Communications, Inc. cofounder announced plans for NCD to join the X Consortium.

The consortium has 35 members and is sponsored by MIT. It was formed in January to further development of the X Window System.

X Window was "designed specifically for network computing environments, where it al-

lows the display processing to be separated from application programs across the network," Carrico said.

Carrico, who was most recently president of 3Com Corp., resurfaced last month as head of NCD, a start-up based here that is developing a network display station capable of supporting the X Window System. Carrico resigned from 3Com in July. Along with his wife, Judy Estrin — who formerly headed 3Com's Bridge Communications Division, where both executives worked prior to merging with 3Com — Carrico abandoned plans for a three-month vacation after just two weeks to join the new venture. Carrico and Estrin have



NCD's Carrico

been appointed president and executive vice-president, respectively.

"I was enamored with the idea. I just couldn't pass it up,"

said Carrico, who previously had expressed interest in pursuing emerging technologies. He stressed that NCD will not compete with 3Com, at least based on 3Com's current product lineup.

He said the company, which was formed in February, has slated initial product deliveries for the first quarter of 1989.

Rounding out the executive team at the company are NCD's three cofounders: Michael Hargigan, vice-president of marketing; Edwin Basart, vice-president of engineering; and Douglas Klein, vice-president of product management. All three are former Ridge Computers executives; Basart was also a cofounder of that firm.

Joining the company last

Continued on page 80

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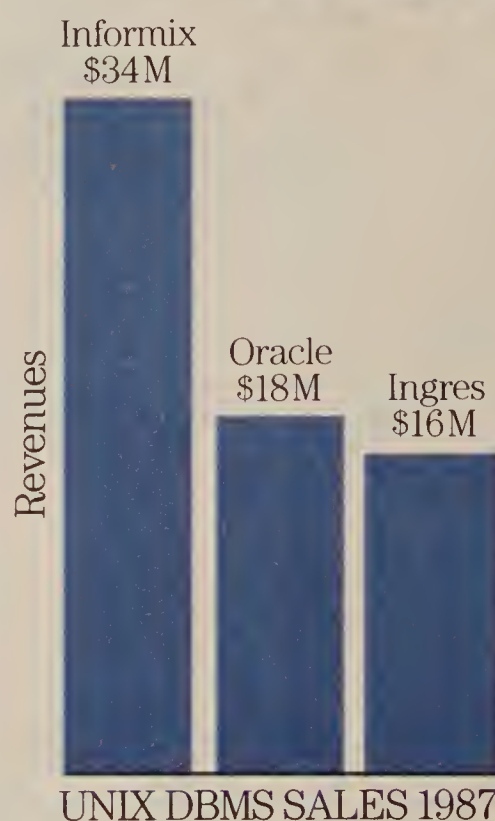
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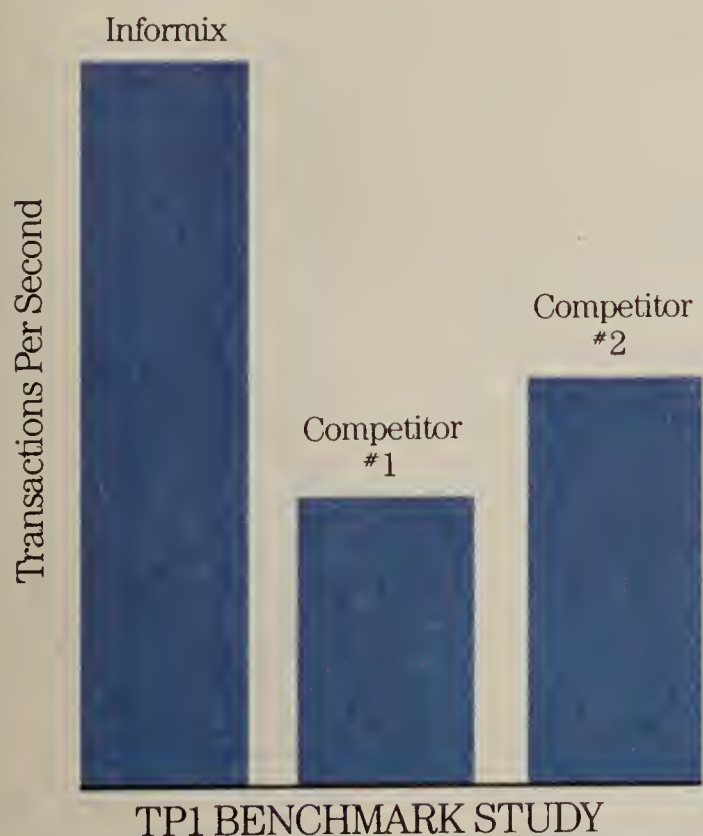
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Apple

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opment, Jean-Louis Gassee.

• **Apple Education** and **Apple Pacific**, led by longtime Apple executive Yocam.

• **Apple Europe**, headed by Michael Spindler, formerly senior vice-president of that organization.

Each man holds the title of president of his respective group and reports to Apple Chairman and Chief Executive Officer John Sculley.

The foundation

According to Sullivan, the groundwork for the restructuring was laid a year ago. "The business was changing; the custom-

er base was changing," Sullivan explained. "We have gotten too large and too complex" for a centralized organization.

Industry watchers said they view the restructuring as part of Apple's widely publicized efforts to woo corporate customers.

Sullivan discounted speculation that Sculley, currently on a summer-long sabbatical, is preparing Apple for his eventual departure and is positioning either Gassee or Loren as his replacement. Sculley has been very involved during his summer break, Sullivan said. "This has been done for sound business practices and not motivated by any plans for a succession," he maintained.

In its latest restructuring, Apple is at-

tempting to move away from organization based on "functions, like sales or engineering," focusing instead on business opportunities, he added. Last spring, Apple reorganized along geographic regions.

Smaller role

Yocam, a 10-year Apple veteran, will have a less prominent role in the new organization. As COO, Yocam was second to Sculley at Apple. However, Sullivan said, Yocam's new assignment should not be viewed as a demotion.

"Del is getting back to something he has always championed — education," he said. "He's very excited about the new challenge."

The education market still represents 40% of Apple's worldwide sales.

IN BRIEF

For whom Bell tolls

Raymond W. Smith has been given the nod by Bell Atlantic Corp. to become president and chief executive officer of the regional Bell holding company when Chairman and Chief Executive Officer Thomas E. Bolger departs at the end of this year. Smith has served as the firm's president and chief operating officer since last November.

Shareholders

San Jose, Calif.-based Wyse Technology has postponed its previously announced public offering of 1.7 million shares of common stock because of "unfavorable marketing conditions." Last week, Computerland Corp. cited similar problems in yanking its initial public offering.

Unlucky 13

Thirteen percent of NBI, Inc.'s U.S. employees will be handed their walking papers in an effort to return the financially troubled office systems maker to profitability. President Stephen G. Jerripts said the cutback of 140 staffers and a restructuring of NBI's sales force are expected to save the Boulder, Colo., firm approximately \$10 million.

Going under for OSI

Unisys Corp. has turned to Australian designers to further its commitment to open systems by developing software linking Unix systems with Unisys mainframes at the applications level. It has signed a \$250,000 contract with the Brisbane, Australia-based Centre for Information Technology Research for an advanced implementation of top layer components in the Open Systems Interconnect model.

Xerox reproduces

Xerox Corp. has broken off its Artificial Intelligence Systems Business Unit into an independent, employee-owned company called Envos Corp. The new Mountain View, Calif.-based firm immediately drew support from Sun Microsystems, Inc., which will port Envos' initial five software products to their Sun-3 and Sun-4 series of Unix workstations.

Sage signs Perot

Rockville, Md.'s Sage Software, Inc. has signed on Perot Systems Corp. to market Sage's APS Development Center Products within the federal government and provide training and services to APS Development Center users in North America. The APS Development Center products are used to design and test IBM-based applications systems.



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Bartolik

CONTINUED FROM PAGE 75

ates real new wealth?

Think about it for a minute. If the money managers limit the growth of industry, where are our computer manufacturers going to turn to meet the seemingly insatiable demand for newer, faster computers? If we put up barriers here at home, they're likely to once again focus on offshore manufacturing and resume that self-consuming cycle that brought us to a crisis two years ago.

Nattering nabobs

The U.S., it seems, is increasingly at the mercy of micro managers — and I don't mean those guys building mega-spreadsheets. The stocks-and-bonds people have apparently taken control of the fiscal apparatus, flip-flopping each month on the latest tweak to extend the oft-mentioned longest expansion in the post-war era.

They don't care about Japanese superconductors, South Korean clones or Russian space probes. They don't want Bill Gates to serve his customers, they want him to squeeze out bigger and bigger profits. Where the naive might think the way to combat imports is to drive up exports, the tinkers prefer to manage the economy solely on the management of the prime rate.

Well, call me naive, but maintaining stock prices does not seem like a healthy underpinning for an aggressive industrial policy. Don't get me wrong; the stock market boom has made a lot of people a lot of money, despite last year's crash, and that's all well and good. But do we really want to continue this vapid trend that marks the successful software company by its acquisitions and quarterly financial reports?

Building blocks

The vote in this corner is that if there is any economic segment we want to unleash on the world markets, it's manufacturing. The creation of hardware — whether cars or computers — creates the need for people to service and enhance them.

Sure, nobody wants runaway inflation, especially not someone who bought his first home with a 16.75% mortgage. But is a moderate rate of inflation really such an abomination? It has worked pretty effectively in the past to raise all ships on the tide, putting the middle class into houses and its children into college, where they acquire the skills to create and invent.

McDonald's might not cheer, what with burger flippers able to get \$7 an hour plus uniforms in some states. But manufacturers and unions seem to have done a pretty good job coming to terms with the realization that labor can price itself out of the market and that industry can squander its profits.

Burger King may not be able to bring in automation to temper wage hikes (then again, who says it can't?), but factories certainly have lots of technology waiting outside the doors.

It just seems to make more sense for the country to be more concerned with those people sweating to build and sell tangible goods than with eliminating the risk of stock speculation.

Bartolik is *Computerworld's* News Editor.

Silicon Valley group ranks high-tech polluters

BY J. A. SAVAGE
CW STAFF

SAN JOSE, Calif. — Advanced Micro Devices, Inc., Digital Equipment Corp., Hewlett-Packard Co., IBM and National Semiconductor Corp. led the list of "Silicon Valley's Dirty Dozen," in data released by the Silicon Valley Toxics Coalition earlier this month.

The coalition urged those computer firms and Intel Corp., which was 11th on the list, to cut their air, water and ground emissions of 307 toxic chemicals, which total more than 8 million pounds annually.

Among the chemicals released

through smokestacks, sewage treatment plants or off-site burial are acetone, hydrochloric acid, sulfuric acid and Freon (chlorofluorocarbon). Such emissions are legal.

Environmental groups were able to itemize emissions for the first time this year following U.S. Environmental Protection Agency Superfund regulations requiring detailed reporting from major manufacturers.

Most important to the coalition, which represents labor, political organizations and environmentalists, is IBM's venting of Freon, which is linked to ozone depletion. In a letter to IBM, the coalition

asked IBM to reduce the use of its current 1.3 million pounds of Freon in the San Jose plant by 90%. The San Jose plant is one of IBM's largest sites for manufacturing disk storage products.

An IBM spokesman said that the company "will replace more than 30%" of its Freon with a combination of water, detergent and ultrasonic waves by the end of 1989. To eliminate the balance, just under one million pounds per year, would "take new developments in the detergent and water cleaning technology and entirely new presses for manual cleaning of parts. [IBM] knows of no acceptable replacement for Freon."

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Carrico

CONTINUED FROM PAGE 75

week was Joe T. Booker, who was named vice-president of manufacturing. Booker, who was president of Priam Corp. until March, will report to Carrico.

The 11-member firm recently completed its initial round of financing, raising \$5 million from four venture capital firms. That money is expected to support the firm through mid-1989, when a second round of funding will be sought.

NCD plans to build a sophisticated terminal device that will reside on a network and support high-level graphics via built-in X Window System software.

The start-up's product will be at a level

between a terminal and a more sophisticated device. Most terminals today do not support graphics at this level and offer limited functionality, while workstations tend to be higher ticket items, Carrico said.

The display station will be based on a Motorola, Inc. MC68000 chip and will support X Window over Transmission Control Protocol/Internet Protocol Ethernet.

Protocol independence will be a key attribute, since Carrico said the product will support a variety of X Window implementations, including a VAX-based approach from Digital Equipment Corp.

The display station will initially target Unix users in the government, university and scientific/engineering markets.

ORDERS & CONTRACTS

First American Corp. in Nashville is installing a statewide information network that delivers the benefits of T1 bandwidth down to all branch offices.

Under terms of a contract with **South Central Bell Advanced Systems**, First American will install 130 digital private branch exchanges manufactured by **Northern Telecom, Inc.**

The network will include Northern Telecom's Meridian SL-1ST at all branch locations across Tennessee and Meridian SL-1XT and SL-1NT systems in all of the company's office locations. Both voice and data will be transmitted over the end-to-end digital network that incorporates

multiplexers and T1 lines, which provide transmission speeds of up to 1.54M bit/sec.

Bank One, Indianapolis NA has signed a \$1.6 million contract with **NCR Corp.** for 47 automated teller machines (ATM). Replacing all Docutel ATMs, the product will be used at branch and off-site locations throughout metropolitan Indianapolis. The purchase includes 43 NCR 5085s and four NCR 5070s.

Air Canada has awarded a contract to **Unisys Corp.** valued at \$1.5 million for a Unisys 1100/73 mainframe computer. The computer will be used for production, backup and development to support migration of Air Canada's cargo application system, called ACCESS, from Toronto to a new facility in Montreal.

Unisys will support system retrofit using Air Canada's Intercept Software code. The code allows the cargo application programs, which currently run on a Unisys 1100/43 mainframe, to operate on the Unisys 1100/73 mainframe without program conversion.

Montgomery Hospital Medical Center has acquired a comprehensive hospital information and financial management system from **Unisys** for \$1.3 million.

The 271-bed acute care teaching hospital in Norristown, Pa., will implement the Unisys Hospital Management System and Health Care Financial Management System on an A 6 mainframe computer. The hospital also has purchased 150 T 27 terminals and 75 printers.

The **Commonwealth of Virginia** has purchased a \$13 million computer system to automate its Department of Corrections. By mid-1990, nearly 2,000 computer terminals will be part of a network linking more than 100 department sites.

The network, built around hardware and software from **Digital Equipment Corp.**, is expected to enhance the administration of the department, improve communications and provide more efficient handling of its thousands of records and statistical data.

NAS

CONTINUED FROM PAGE 75

According to a company spokesman, the move consolidates the U.S. and international executives; he said NAS is taking this step in order to accelerate decision-making and bring products to market faster.

NAS has recently been criticized by analysts — particularly Bob Djurdjevic, president of Annex Research, a mainframe consultant in Phoenix — for its lack of marketing skill. "This change will address marketing, but whether it's enough is a different question," Djurdjevic said last week.

It is rare that more than one person shares a high office in a corporation, unless it is an interim step while a new executive learns the ropes.

A NAS spokesman said that the move had nothing to do with the recent announcement of poor revenue but was rather part of a restructuring that began in June.

PROBLEMS:

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The virtual disk can be used for almost anything that does not require permanent retention beyond system start-up (IPL). Examples are compiler work files, SORT work files, temporary files used within or between application jobs. Application programs are not affected, the JCL is simply changed to point to the virtual disk drive 'address'.

A built-in aspect of the product is that the DOS/VSE Label Area is relocated to the virtual disk. This area is one of the most frequently accessed in most DOS sites, so moving it to the virtual disk should result in significant performance improvement to the overall system, regardless of any other specific use of the virtual disk capability.

BIM-VIO is priced at \$3600 for a permanent license, \$1800 on an annual lease or \$180 on a monthly rental.

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DB2: Catch the surging wave

Mounting demand and dearth of experienced pros promises premium pay

BY SHERYL KAY
SPECIAL TO CW



Every now and then a software product becomes a darling of the industry. Such is becoming the case with DB2, IBM's relational database management system that became available for general use three years ago.

In view of DB2's success, investing in a career built around it seems to be a decent bet. The relational features of DB2 should also draw data processing professionals to it. For applications programmers, DB2 is a productivity tool as well as a database, according to Howard Fosdick, president of Fosdick Consulting, Inc. in Villa Park, Ill., and of the Midwest DB2 Users Group.

"The DB2 database administrator can concentrate more on the logical design vs. the physical design of the database," Fosdick says. The DB2 administrator, therefore, need not have a technical background as in-depth as that of an IMS administrator.

But DB2 does not lessen the need for good database administrators. "You still need top-level database design people, or you will run into the same problem that a poor design would cause in any other DBMS," notes Tony

Massaro, manager of data services at Ryder Transportation Resources, a division of Ryder Systems, Inc. in Miami. DB2 may make data access, enhancements or maintenance easier, but building the database still requires a good foundation, which comes from the database administrator's design.

Demanding profession

With the increasing popularity of DB2, the demand for professionals experienced with it is on the rise. Mike Edwards, vice-president of Retail Recruiters/Spectrum Executive Search of New Hampshire, Inc., says that of the Nashua firm's 1986 searches for DBMS professionals, 65% were for people with a background in Cullinet Software, Inc.'s IDMS, 30% for those proficient in IMS and 5% for individuals who had worked with other databases.

Edwards says that this year he is finding his need for IDMS people has fallen dramatically, calls for IMS professionals have risen slightly and searches for individuals with a strong DB2 background now total 20%.

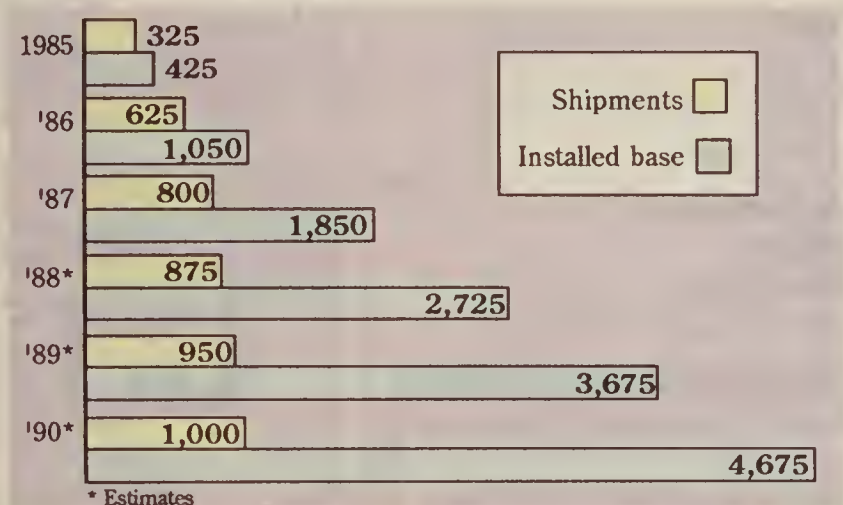
"It has taken a while to catch on," Edwards says, because of performance problems experienced by shops that tested DB2, especially IMS shops with large numbers of transactions. "No one wanted to begin hiring new

employees until they knew whether or not they would keep the product," he says.

But despite technical improvements and the growing popularity of DB2, DP professionals who are well versed in it

Growth market

Annual shipments of IBM's DB2 database management system are expected to grow through 1990



SOURCE: INTERNATIONAL DATA CORP.
CW CHART

are still few and far between.

"We are looking for someone right now," says James Williams, database manager at Empire Blue Cross/Blue Shield in New York. "The talent just isn't there, and there are a lot of reasons."

Williams says many people have taken a seminar on DB2 but

do not have working experience with the package. This situation may be due in part to the fact that companies need a major IBM processor to run full-blown DB2 production applications. "There just aren't hundreds of shops out there that are ready to say, 'Sure, let's dedicate a 3090 just to DB2,'" Williams says.

In job interviews at Ryder, Massaro says he has found several candidates with six months

enough to find someone, they certainly know how marketable they are."

Shapely figures

Salary ranges for professionals with in-depth DB2 experience are substantially higher than pay for similar professionals without such experience. Applications programmers with one to two years of strong DB2 work and three or more years in DP might earn \$35,000 to \$45,000 a year. Database administrators with five or more years of DBMS experience, one to two in DB2, are earning salaries of \$45,000 to \$60,000.

Those DP professionals who do not have this background can take comfort in the knowledge that DB2 is quite easy to learn, particularly when compared with other types of DBMSs. Fosdick also notes that because it is designed to be easy to use, assimilating DB2's features is fairly trouble free. Also, DB2 manuals are "light-years ahead" of IMS manuals.

For people with the chance to learn DB2, there should be no question about whether or not to go ahead, according to Fosdick. "It's like being on a surf board," he says. "If you are into DB2, you are riding the crest of a new wave just as it's getting going, and you've got a long, great ride ahead of you. An IMS person is about ready to scrape the beach."

Kay is an MIS human resources consultant based in Tampa, Fla.

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13. Treasurer, Controller, Financial Officer
41. Engineering, Scientific, R&D, Tech. Mgt.
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60. Consulting Mgt.
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80. Educators, Journalists, Librarians, Students
90. Others _____ (Please specify)
3. COMPUTER INVOLVEMENT (Circle all that apply) Types of equipment with which you are personally involved either as a user, vendor, or consultant
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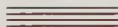


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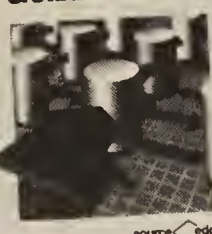
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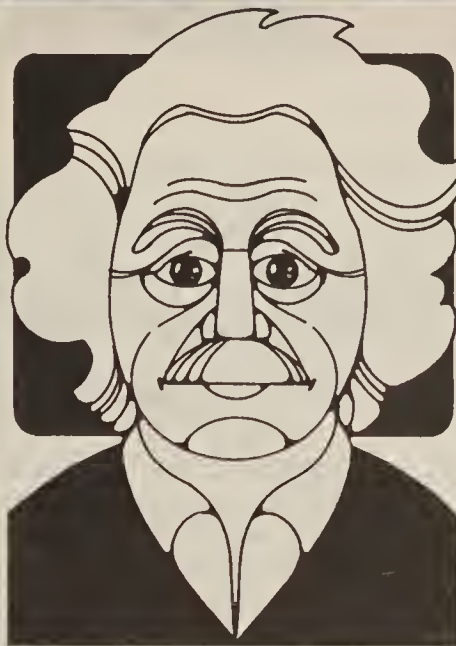
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MARKETPLACE

Wang fees deflate market value

Panic over operating system licensing should subside as costs are clarified

BY REBECCA S. DAWSON
IDC FINANCIAL SERVICES CORP.

Effective July 1, a new operating system licensing policy was instituted by Wang Laboratories, Inc. Wang's failure to clearly communicate to dealers and users the ramifications of this policy modification has created much confusion.

The policy states that customers buying used systems from Wang or on the secondary market after July 1 must pay a transfer fee to obtain a VS operating system perpetual license. In the case of an annual license, the customer — user or dealer — must pay a transfer fee and then take over the yearly payments.

Initially, Wang did not disclose any pricing for this transfer fee. Many dealers and users assumed that the cost would be equal to the price of a new oper-

ating system license. As a result, in June there was a selling spree caused by dealers who were trying to discard their systems before this policy went into effect. This aggressive selling caused the value of some Wang processors on the secondary market to decrease sharply.

For example, the current retail fair market value for a VS 65 went from 57% in March to 40% this month. The value for a VS 5 declined from 58% to 47% during the same period.

Don't panic

It seems that this panic was unnecessary, since the actual pricing for these transfer fees is significantly less than most dealers and users had anticipated. In most cases, the license transfer fee for Wang's older VS systems is only \$1,000. The fees are higher for newer VS systems, especially the VS 7000 series.

The transfer fees for this series range from \$8,000 for the VS 7010 to \$24,000 for the VS 7320.

Wang's policy may have a positive effect on the less popular VS 300, which had many problems, mostly software-related, before it was introduced. As a result of these difficulties, Wang renamed this CPU, put it in a new cabinet and reintroduced it as the VS 7310.

The perpetual license transfer fee for a VS 7310 is nearly \$20,000, while the fee for a VS 300 is a mere \$1,000. It is for this reason that the VS 300s, which were trading sporadically on the used market in March, are now trading more actively. Currently, the wholesale value for a VS 300 is approximately 43%.

In July, trading of VS systems on the secondary market slowed down considerably. There were three major causes that contrib-

uted to this slackening: The institution of the software policy; the traditional holiday and vacation slowdown; and anticipation of Wang's "Niagara" series, which was introduced as the VS 5000 on July 26.

Trading has picked up a little since the announcement of Wang's VS 5000 series in July, but most people are still waiting to see what this entry offers.

result, the value of the E models will be lower when they first begin to trade on the secondary market.

The values of the E models will also be driven downward by the used price of the VS 5, 6 and 65. These models can be upgraded to the 5E, 6E and 75E, respectively. The values for VS 5, 6 and 65 models are dropping dramatically, since they have

Wang processors

Current retail fair market value

	Date shipped	Wang list price	Retail percent of list price
VS 5	April 1986	\$13,000	47%
VS 65	January '85	\$35,200	40%
VS 90	April '82	\$109,200	14%
VS 100	December '80	\$136,000	22%

SOURCE: IDC FINANCIAL SERVICES CORP. CW CHART

The values of the 5E, 6E and 75E, which were announced in October 1987, were impacted by this announcement, since the VS 5000 series was a direct replacement for these models. As a

now effectively been replaced twice.

For more information, contact IDC Financial Services Corp.'s Terri LeBlanc at (508) 872-8200.

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AT Model 239	\$2,600	\$2,800	*
AT Model 339	\$3,200	*	*
PS/2 Model 30	\$1,525	*	*
PS/2 Model 50	\$2,350	*	*
PS/2 Model 80	\$4,200	*	*
Compaq Portable I	\$825	\$800	\$1,250
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Portable III	\$3,000	\$4,000	*
Portable 286	\$2,200	\$2,325	\$3,200
Plus	\$1,100	\$1,350	\$2,100
Deskpro 20-MHz	\$1,200	\$1,300	\$1,775
Deskpro 286	\$2,500	\$2,825	\$2,350
Deskpro 386	\$5,100	\$4,525	*
Apple Macintosh 512	\$700	\$825	\$1,300
512E	\$800	\$1,050	*
Plus	\$1,050	\$1,425	\$1,950
Plus 20-MHz	\$1,350	\$1,950	\$3,000
SE	\$1,950	\$2,000	*
SE 20-MHz	\$2,450	*	*
II	\$4,750	*	*
Apple Laserwriter Plus	\$3,100	\$3,300	\$3,800
NEC Multispeed EL	\$900	*	*
Toshiba T3100/10	\$1,750	\$2,600	*
Toshiba T5100	\$4,100	*	*
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* Machine introduced later or sold in a different configuration

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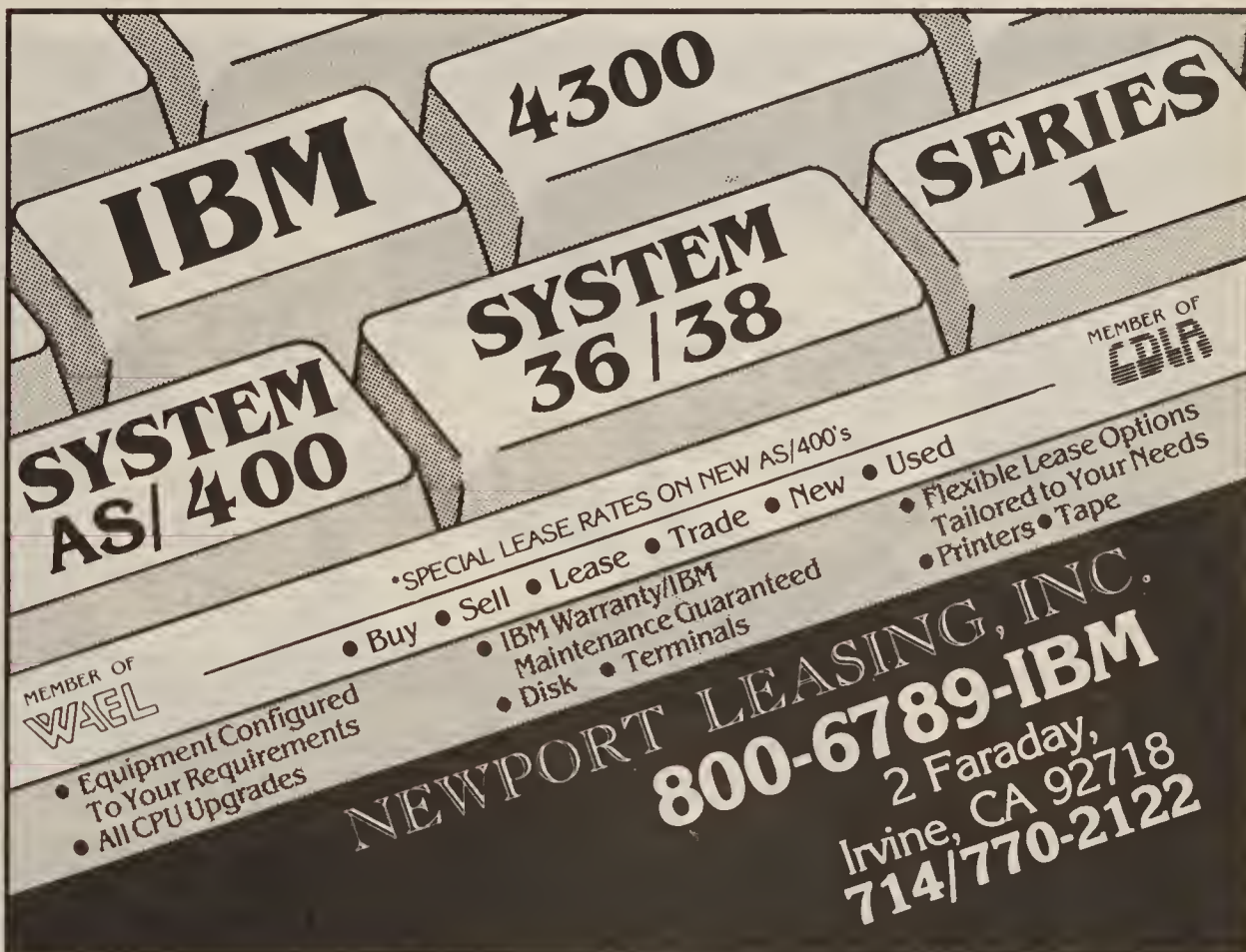
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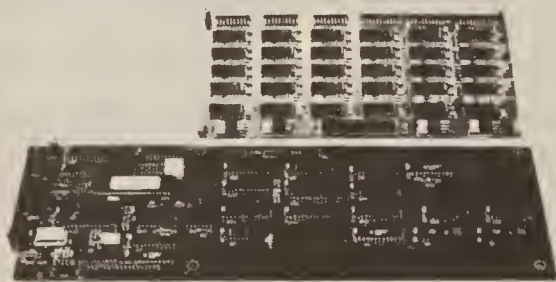
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The Department of Housing Preservation and Development (HPD), hereby gives notice that it has extended the deadline for submitting sealed bids for providing Keypunching and Verification Services for HPD's Division of Code Enforcement.

The NEW DEADLINE by which all sealed bids must be submitted to HPD, shall be no later than 1:00 P.M., Thursday, September 22, 1988. Such bids must be submitted to HPD, 75 Maiden Lane, 7th Floor, Room 7000, New York, New York 10038.

Bids will be publicly opened and read at 11:00 A.M., on Friday, September 23, 1988, at 75 Maiden Lane, 7th Floor, Room 7000, New York, New York.

Blank bid forms, revised contract documents and further information may be obtained by applying in person to HPD's Office of Code Enforcement, 100 Gold Street, 8th Floor, Room 8Y4, New York, Attention: Ed Pers.

A pre-bid conference will be held at 2:00 P.M. on Friday, September 16, 1988, 100 Gold Street, 9th Floor, Room 9169, New York, New York.

The proposed contract shall be subject to all Equal Opportunity provisions as required by New York State and/or City statutes, rules and regulations.

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REQUEST FOR PROPOSALS FINANCIAL INFORMATION SERVICES AGENCY (FISA) CITY OF NEW YORK

The Financial Information Services Agency of the City of New York is seeking proposals for a Data Manipulation software product. Copies of the Request for Proposals may be obtained from Ms. Marlene Cintron at the Financial Information Services Agency at 111 Eighth Avenue, 13th Floor, New York, NY 10011 or by phoning Ms. Cintron at 212-206-3052.

A Proposers' Conference will be held at 2:30 P.M. on September 6, 1988; the deadline for receipt of proposals is 5:00 P.M. on September 16, 1988.

Further details re the conference, specifications and proposal submission may be found within the Request for Proposals.

MISSISSIPPI CENTRAL DATA PROCESSING AUTHORITY

Sealed proposals will be received by the CDPA, 301 N. Lamar St., 301 Building, Suite 508, Jackson, MS 39201 for the following equipment and services:

Request for Proposal No. 1392, due Tuesday, September 27, 1988 at 3:30 p.m. for the acquisition of an integrated library management package for JONES COUNTY JUNIOR COLLEGE. No charge.

Request for Proposal No. 1393, due Friday, September 9, 1988 at 3:30 p.m. for the upgrade of their existing IBM 4381 mainframe for the UNIVERSITY OF MISSISSIPPI MEDICAL CENTER. No charge.

Detailed specifications may be obtained from the CDPA office. The CDPA reserves the right to reject any and all bids and proposals and to waive informalities.

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REQUEST FOR PROPOSALS FINANCIAL INFORMATION SERVICES AGENCY (FISA) CITY OF NEW YORK

The Financial Information Services Agency of the City of New York is seeking proposals for the purchase and maintenance of a 3480/Cartridge Tape Subsystem. Copies of the Request for Proposals may be obtained from Ms. Marlene Cintron at the Financial Information Services Agency at 111 Eighth Avenue, 13th Floor, New York, NY 10011 or by phoning Ms. Cintron at 212-206-3052.

A Proposers' Conference will be held at 2:30 P.M. on September 7, 1988; the deadline for receipt of proposals is 5:00 P.M. on September 16, 1988.

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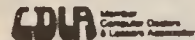
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TRAINING

Another stab at justifying costs

Timing, cost control, high-level input can all rally management support

BY BONNIE MACKFILL
CW STAFF

Gone are the days when training managers were responsible only for delivering courses requested by users. With budget cutbacks directed at many training departments, managers now face the challenge of justifying the expenses of some of those courses to upper management.

In general, data processing managers should emphasize that training will increase the profitability of the organization, says Marie Martz, a partner at Garant & Associates in Greenbrae, Calif. When training is clearly related to the company's profitability, upper management is more likely to approve a request, she says.

One way to make a good case is to emphasize the role training can play in the retention of employees, Martz says. "It costs far more to replace an employee than it does to keep an employee," she says. "So if you have good employees that you want to keep and career advancement is something they are attracted to and will cause them to stay, then

you will offer training for career advancement." It might cost \$7,500 to hire a programmer and more to fill other positions, she says.

Martz also suggests that simply improving employee morale can be justification for training. If employees are happy, she says, they may be more productive and stay at their position longer, which can contribute to profitability.

Work with the top

Drawing upper management into planning can also help win approval for training, says Norma Lawler, a professional training coordinator at Logistic Systems Architects in Sacramento, Calif. A representative from upper management works with Lawler in identifying courses, meeting with prospective instructors and identifying objectives based on the skill levels of participants.

Lawler says she did not always have full participation of upper management. She had to convince them that their involvement would be worthwhile by pointing out that they had

been spending a good deal of money on training that was not giving them the results they wanted. The work is dispersed among various managers; one typically puts in about six hours to help plan a course.

IF YOU have good employees that you want to keep and career advancement is something they are attracted to and will cause them to stay, then you will offer training."

MARIE MARTZ
GARANT & ASSOCIATES

Careful planning also lessens the likelihood of a course failing, Lawler says, noting that she can save money by bringing a course on-site. In one instance, for a software management class, instead of paying \$5,000 plus travel expenses to train five employees off-site, she brought a tailored course on-site and paid about \$16,000 to train 31 employees.

As vice-president of information services at Blue Cross/Blue Shield of Missouri, Ed Hopkins is

a senior manager who approves or rejects training requests. Hopkins says he is concerned with how relevant training is to an employee's job and whether the chosen course is the best one at the best price.

"I look at the person and the course he or she wants to take and make a judgment based on what I think the potential of that person is and whether or not I think the training can improve

that potential," Hopkins says.

The review process is very informal, he adds. In most cases, he knows the employee and makes a judgment on his own. If he is not familiar with the employee, he meets with the employee or the employee's manager to help make a decision.

Training managers unsure of whether they are getting the most for their money can hire a training auditor. Bill Sebrell, vice-president of Training Plus, a division of Database Manag-

ment, Inc. in Manchester, Conn., conducts audits to determine if the training offered by a company is effective.

Get it right

According to Sebrell, problems occur because the wrong students attend the wrong classes for the wrong reasons. "Managers shouldn't be sending employees who don't use Lotus [products] to extensive [Lotus] classes," he says. "However, they should be sent to a one-day seminar to get basic understanding of products if that is something that will be needed in the future for career advancement." Employees need to apply their new skills immediately after training or they will slowly begin to forget what they learned, he says.

Sebrell is not against using training as a means of boosting employee morale but suggests that placing employees in training that is appropriate is more effective.

"A good training program," he says, "is one that is training people on the skills they need to know to do their current job and educating them on the skills they will need to know to do their next job."

MacKell is a *Computerworld* researcher.

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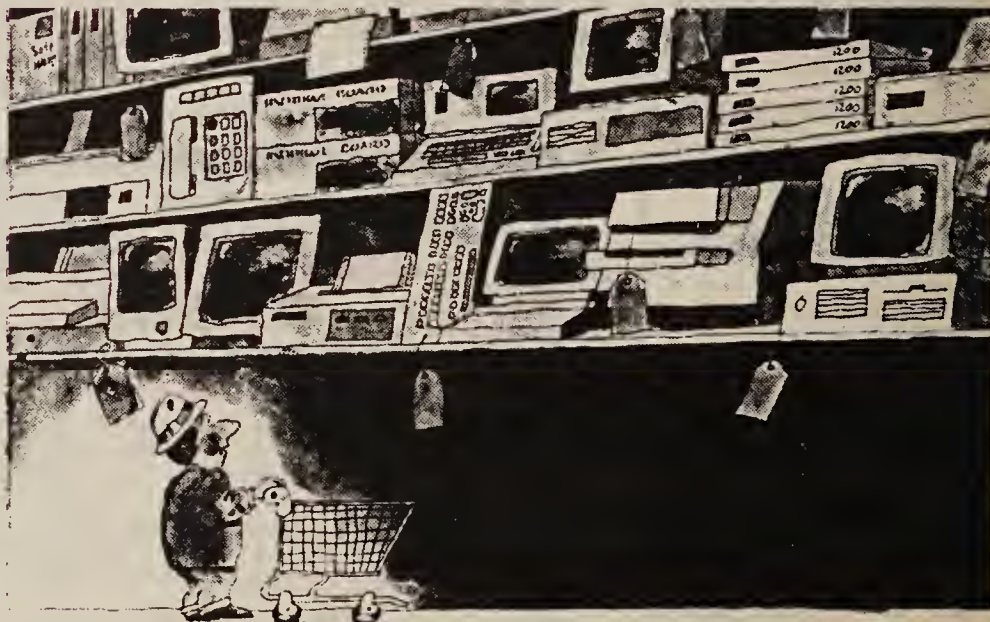
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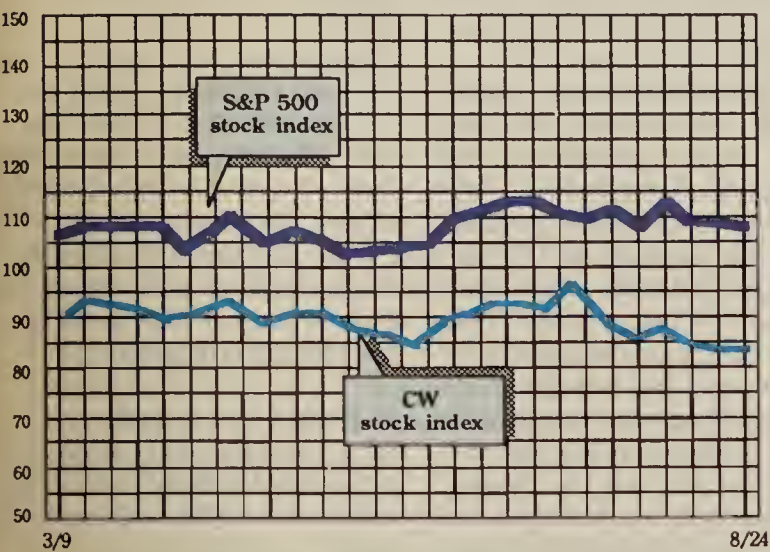
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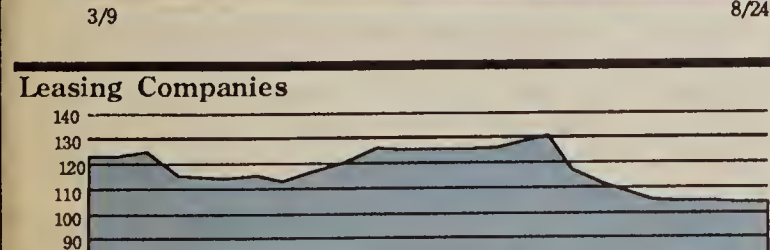
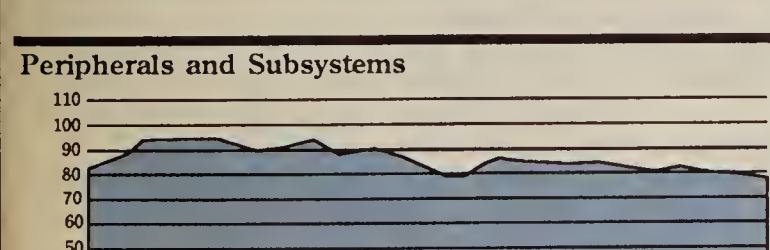
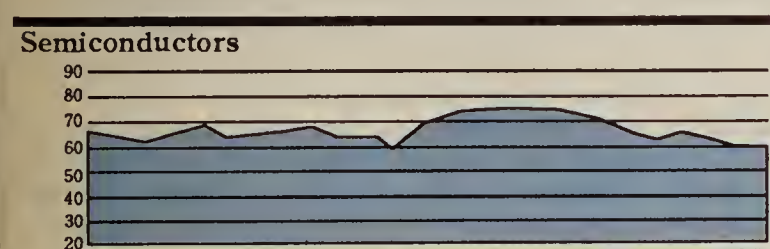
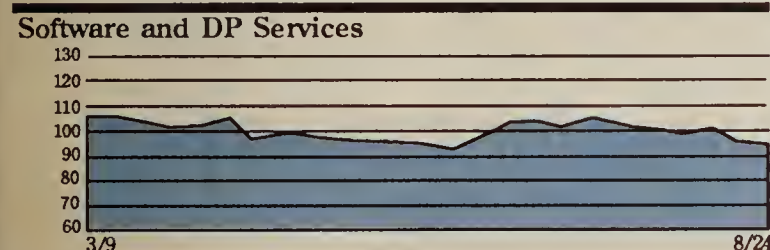
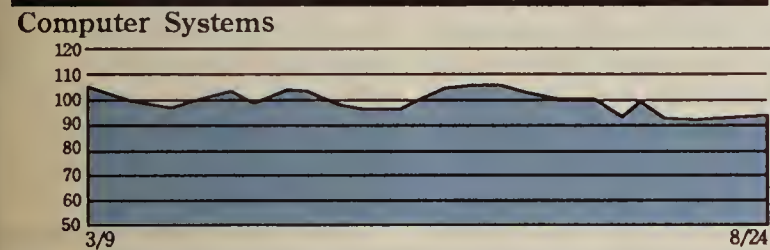
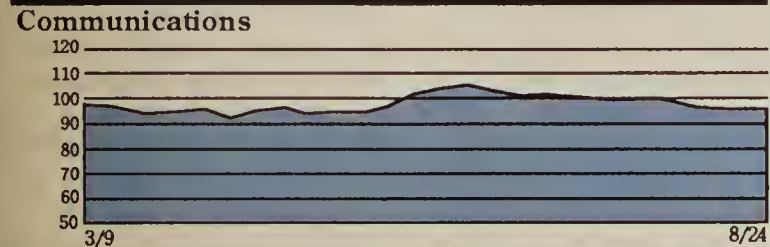
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Issue Date	Topic	Ad Closing Date
Sept. 19	Hardware Roundup: Large, Medium Scale and Special Purpose Systems	Sept. 2
Sept. 26	Hardware Roundup: Small Scale Systems	Sept. 9
Oct. 3	Hardware Roundup: Personal Computers and Workstations	Sept. 16
Oct. 17	AI/Expert Systems	Sept. 30
Oct. 31	Unix	Oct. 14
Nov. 14	PC Graphics	Oct. 28
Dec. 5	LAN's	Nov. 18
Dec. 19	IBM-Compatible PCs/PS2 Market Products/Monitors	Dec. 2

STOCK TRADING INDEX



Indexes	Last Week	This Week
Communications	96.8	96.2
Computer Systems	94.9	95.0
Software & DP Services	97.2	96.6
Semiconductors	61.0	60.7
Peripherals & Subsystems	79.0	78.6
Leasing Companies	106.2	106.3
Composite Index	84.4	84.1
S&P 500 Index	109.8	110.0



CW CHARTS

Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, AUGUST 24, 1988					
EXCH	52-WEEK RANGE (1)	PRICE CLOSE AUG. 24 1988	WEEK NET CHNGE	WEEK PCT CHNGE	

Communications and Network Services

N	AMERICAN INFO TECHS CORP	100	74	89.63	0.4	0.4
N	ANDREW CORP	19	11	17.25	0.0	0.0
N	ARTEL COMM CORP	3	1	2.00	-0.3	-11.1
N	AT&T	35	20	25.00	0.0	0.0
N	AVANT GAROE COMP INC	6	1	1.25	0.0	0.0
N	AVANTEK INC	16	5	5.63	-0.3	-4.3
N	AYOIN CORP	35	16	21.50	-1.1	-5.0
N	BELL ATLANTIC CORP	80	61	69.75	0.5	0.7
N	BELLSOUTH CORP	44	29	39.50	-0.3	-0.6
N	COMPRESSION LABS INC	6	2	3.13	-0.1	-3.8
N	COMPUTER NETWORK TECH	5	1	1.33	0.1	8.9
N	CONTEL CORP	38	25	35.75	-0.3	-0.7
N	DATA SWITCH CORP	10	4	6.38	-0.1	-1.9
N	DIGITAL COMM ASSOC	46	20	29.13	-0.6	-2.1
N	DYNATECH CORP	32	14	21.75	-0.3	-1.1
N	FIBRONICS INTERNATIONAL INC	5	2	3.75	0.0	0.0
N	GANDALF TECHNOLOGIES	8	5	6.50	0.3	4.0
N	GENERAL DATACOMM INDS	9	3	3.50	-0.1	-3.4
N	GTE CORP	44	29	40.38	0.0	0.0
N	INFOTRON SYS CORP	14	5	10.00	-0.8	-7.0
N	ITT CORP	65	42	46.88	-0.6	-1.3
N	M A COM INC	16	7	10.00	0.1	1.3
N	MCI COMMUNICATIONS CORP	18	7	16.75	0.3	1.5
N	MICOM SYS INC	17	7	15.63	0.0	0.0
N	NETWORK EQUIPMENT TECH INC	28	12	19.25	0.0	0.0
N	NETWORK SYS CORP	13	7	8.88	-0.3	-2.7
N	NORTHERN TELECOM LTO	24	14	17.13	-0.1	-0.7
N	NOVELL INC	30	12	26.50	0.5	1.9
N	NYNEX CORP	78	58	63.75	0.1	0.2
N	PACIFIC TELESIS GROUP	34	23	28.13	0.1	0.4
N	PARADOYNE CORP	8	4	5.38	-0.1	-2.3
A	PENRIL CORP	5	1	4.25	0.0	0.0
N	PLESSEY PLC	38	23	28.00	0.1	0.4
N	SCIENTIFIC ATLANTA INC	20	8	11.00	0.3	2.3
N	SOUTHWESTERN BELL CORP	46	22	37.00	0.1	0.3
N	3 COM CORP	26	12	18.13	0.3	1.4
N	US WEST INC	60	43	54.25	-0.3	-0.5

Computer Systems

N	ALLIANT COMPUTER SYS	19	5	4.63	-0.1	-2.6
N	ALPHA MICROSYSTEMS	8	3	6.00	0.3	4.3
N	ALTOS COMPUTER SYS	15	9	9.13	-0.1	-1.4
A	AMDAHL CORP	56	19	44.25	0.6	1.4
N	APOLLO COMPUTER INC	23	9	9.25	0.0	0.0
N	APPLE COMPUTER INC	60	28	40.75	-1.3	-3.0
N	BOLT BERANEK & NEWMAN	25	12	16.00	-0.1	-0.8
N	BRITTON LEE INC	4	1	2.38	-0.3	-9.5
N	COMPAQ COMPUTER CORP	79	34	54.50	-0.6	-1.1
N	COMPUTER AUTOMATION INC	16	4	5.63	0.5	9.8
A	COMPUTER CONSOLES INC	9	2	8.00	0.1	1.6
N	CONCURRENT COMP CORP	24	11	19.38	0.0	0.0
N	CONTROL DATA CORP OEL	38	18	21.13	-1.1	-5.1
N	CONVERGENT TECH	9	3	6.06	0.1	1.1
N	CONVEX COMPUTER CORP	15	6	7.38	0.1	1.7
N	CRAY RESH INC	119	47	80.50	3.3	4.2
N	DAISY SYS CORP	12	5	8.88	0.3	2.9
N	DATA GEN CORP	37	16	17.38	0.1	0.7
N	DATAPoint CORP	9	3	4.75	0.0	0.0
N	DIGITAL EQUIP CORP	200	92	94.50	-0.5	-0.5
N	FLOATING POINT SYS INC	11	3	3.13	0.1	4.2
N	GOULD INC	34	8	15.25	1.3	8.9
N	HARRIS CORP	41	22	26.25	0.1	0.5
N	HEWLETT PACKARD CO	74	36	45.75	1.5	3.4
N	HONEYWELL INC	88	49	60.63	0.4	0.6
N	IBM	175	102	112.75	-1.9	-1.6
N	INFORMATION INTL INC	16	9	14.25	-0.3	-1.7
N	IPL SYS INC	3	1	2.25	-0.1	-5.3
N	MASS COMPUTER CORP	14	4	4.75	0.0	0.0
N	MATSUSHITA ELEC INOL LTD	230	103	203.38	-6.6	-3.2
N	MEGADATA CORP	6	2	2.31	-0.3	-11.9
N	MENTOR GRAPHICS CORP	39	14	27.50	-0.8	-2.7
N	NBI INC	12	3	3.63	0.0	0.0
N	NCR CORP	87	50	54.38	-0.1	-0.2
N	PRIME COMPUTER INC	31	12	12.38	0.3	2.1
N	PYRAMID TECHNOLOGY	16	5	11.25	0.5	4.7
N	STRATUS COMPUTER	35	15	22.75	-0.3	-1.1
N	SUN MICROSYSTEM INC	44	14	37.75	-0.5	-1.3
N	SYMBOLICS INC	5	1	1.25	0.1	5.2
N	SEQUENT COMPUTER SYS INC	19	9	17.50	-0.3	-1.4
N	TANDEM COMPUTERS INC	37	12	13.38	0.1	0.9
N	TANDY CORP	57	28	39.75	-0.5	-1.2
N	ULTIMATE CORP	37	9	9.88	-0.1	-1.3
N	UNISYS CORP	48	24	32.25	0.4	1.2
A	WANG LABS INC	19	9	9.25	0.3	2.8

Software & DP Services

N	ADVANCEO COMP TECH	6	1	1.25	0.0	-2.5
N	AGS COMPUTERS INC	30	11	27.88	0.9	3.2
N	AMERICAN MGMT SYS INC	20	9	14.38	0.8	5.5
N	ANACOMP INC	12	4	8.25	0.0	0.0
N	ANALYSTS INTL CORP	10	4	8.50	-0.1	-1.4
N	ASHTON TATE	33	13	22.00	-0.8	-3.3
N	ASK COMPUTER SYS INC	16	6	13.63	-0.3	-1.8
N	AUTODESK INC	34	12	25.50	1.0	4.1
N	AUTO DATA PROCESSING	55	16	37.63	-0.1	-0.3
N	BOOLE & BABBAGE INC	11	5	9.50	-0.3	-2.6
N	COMPUTER ASSOC INTL INC	37	15	25.00	-1.4	-5.2
N	COMPUTER HORIZONS CORP	14	7	10.25	0.4	3.8
N	COMPUTER SCIENCES CORP	73	38	45.75	-1.5	-3.2
N	COMPUTER TASK GROUP INC	16	9	12.13	0.0	0.0
N	COGNOS INC	17	4	5.00	0.3	5.3
N	COMSHARE INC	26	12	21.75	1.3	6.1
N	CULLINET SOFTWARE INC	14	4	6.00	0.1	2.1
N	OUQUESNE SYS INC	22	10	16.50	-0.5	-2.9
N	GENERAL MTRS (CLS E)	51	30	39.38	0.6	1.6
N	HOGAN SYS INC	12	3	4.00	0.3	6.7
N	INFORMIX CORP	31	9	9.75	-0.6	-6.0
N	INTELLICORP INC	8	2	2.50	-0.5	-16.7
N	KEANE INC	16	6	14.25	0.0	0.0
N	LOTUS DEV CORP	40	18	19.25	-0.6	-3.1
N	MANAGEMENT SCI AMER	14	6	9.38	0.5	5.6
N	MICRO PRO INTL CORP	7	2	3.00	-0.1	-2.1
N	MICROSOFT CORP	79	37	51.50	-1.0	-1.9
N	MORINO ASSOCIATES INC	20	7	14	-0.8	-5.3
N	NATIONAL DATA CORP	34	20	22.38	-0.3	-1.1
N	ON LINE SOFTWARE INTL INC	21	5	4.88	0.0	0.0
N	ORACLE SYS CORP	22	8	18.25	0.3	1.4
N	PANSOPHIC SYS INC	28	11	13.25	-1.8	-11.7
N	POLICY MGMT SYS CORP	30	15	22.25	-0.3	-1.1
N	PROGRAMMING & SYS INC	14	7	13.00	0.5	4.0
N	REYNOLDS & REYNOLDS CO	38	14	19.00	0.0	0.0
N	SEI CORP	22	10	19.50	-0.3	-1.3
N	SHAREO MEO SYS CORP	30	15	16.13	0.4	2.4
N	SAGE SOFTWARE INC	13	5	6.50	-0.1	-1.9
N	SOFTWARE PUBG CORP	25	5	19.50	-0.6	-3.1
A	STERLING SOFTWARE INC	11	6	6.50	0.0	0.0
N	SUNGARD DATA SYS INC	20	10	18.25	0.3	1.4

N	SYSTEMATICS INC	34	19	30.00	-0.5	-1.6
N	SYS. SOFT INC	24	7	20	2.0	11.3
N	VM SOFTWARE INC	20	7	13.25	-2.5	-15.9

Semiconductors

N	AOV MICRO OEVICES INC	25	8	11.88	0.0	0.0
N	ANALOG OEVICES INC	23	8	11.88	0.3	2.2
N	ANALOGIC CORP	13	5	7.25	0.1	1.8
N	INTEL CORP	42	18	29.75	-1.4	-4.4
N	LSI LOGIC CORP	15	7	12.00	-0.1	-1.0
N	MONOLITHIC MEMORIES INC	30	8	14	0.0	0.0
N	MOTOROLA INC	74	35	43.00	0.1	0.3
N	NATL SEMICONDUCTOR	22	9	9.50	0.1	1.3
N	TEXAS INSTRS INC	80	36	39.25	-0.1	-0.3
A	WESTERN DIGITAL CORP	29	11	13.38	-0.6	-4.5

Peripherals

N	ALLOY COMP.	13	2	2.19	0.2	9.4
N	AMINTL INC	8	3	5.63	0.3	4.7
N	ASTRESH INC	21	6	10.75	0.3	2.4
N	AUTO TROL TECH CORP	6	3	5.13	0.1	2.5
N	BANCTEC INC	14	5	8.50	0.1	1.5
N	CIPHER DATA PROOS INC	12	4	8.88	0.4	4.4
A	COGNITRONICS CORP	4	2	2.88	-0.1	-4.2
N	COMPUGRAPHIC CORP	28	19	26.88	0.0	0.0
N	DATAPRODUCTS CORP	24	7	10.88	0.1	1.2
A	DATA RAM CORP	8	5	7.75	0.1	1.6
N	EASTMAN KODAK CO	71	39	42.75	-0.6	-1.4
N	E M C CORP MASS	29	4	4.25	0.1	3.0
N	EMULEX CORP	9	4	7.88	-0.3	-3.1
N	EVANS & SUTHERLAND	33	14	17.75	0.8	4.4
N	ICOT CORP	8	3	3.25	0.1	4.0
N	INTERLEAF INC	24	10	10.38	-0.4	-3.5
N	IOMEGA CORP	5	1	3.13	-0.2	-5.7
N	LEE DATA CORP	6	3	3.25	0.0	0.0
N	MASSTOR SYS CORP	5	1	2.50	0.1	2.5
N	MAXTOR CORP	16	6	7.13	-0.5	-6.6
N	MICROPOLIS CORP	37	10	11.00	0.0	0.0
N	MINISCRIBE CORP	17	5	10.00	-0.5	-4.8
N	MINNESOTA MNG & MFG CO	84	45	60.63	-0.5	-0.8
A	MSI DATA CORP	19	8	9.38	-0.1	-1.3
N	PERSONAL COMPUTER PRODUCTS INC	7	4	4.88	-0.1	-2.5
N	PRIMAR CORP	4	1	1.50	0.1	9.1
N	PRINTRONIX INC	12	7	10.13	0.4	3.8
N	QMS INC	27	7	7.75	0.0	0.0
N	QUANTUM CORP	19	8	11.50	0.8	7.0
N	RECOGNITION EQUIP INC	18	6	8.38	-0.4	-4.3
N	REXON INC	10	4	6.88	0.1	1.9
N	SEAGATE TECHNOLOGY	31	8	9.25	-0.4	-3.9
N	STORAGE TECH CORP	4	1	2.13	-0.3	-10.5
N	TANDON CORP	4	1	1.88	-0.1	-6.3
A	TEC INC	6	3	3.38	-0.1	-3.6
N	TEKTRONIX INC	40	21	21.25	-1.1	-5.0
N	TELEVIDEO SYS INC	3	1	0.97	-0.1	-8.8
N	XEROX CORP	84	50	53.63	-0.9	-1.6
N	XIOEX CORP	14	5	9.00	0.0	0.0

Leasing Companies

N	CAPITAL ASSOCIATES INTER-NATIONAL INC	9	4	6.00	0.0	0.0
N	COMOISCO INC	37	12	19.75	0.1	0.6
Q	CONTINENTAL INFO SYS	12	4	4.00	0.0	0.0
Q	PHOENIX AMERN INC	5	2	2.75	0.0	0.0
Q	SELECTERM INC	6	3	4.88	0.0	0.0

CA's drive

FROM PAGE 1

Uccel among them — have grown through multiple acquisitions of smaller developers. But with the \$800 million buyout of Uccel, CA served notice that even the industry's highest ranking players have their price.

"One has to wonder how they avoid getting a mental hernia," says Gilbert Mintz, a partner at Broadview Associates, the Fort Lee, N.J.-based investment banking firm that has championed the merger mania epitomized by CA. "I guess we have to assume that CA will know when they've gotten too big."

Still hungry

CA clearly wants to get bigger. In recent weeks, it has explored the acquisition of two of the industry's largest firms — Management Science America, Inc. (MSA) in applications and Applied Data Research, Inc. (ADR) in database management and fourth-generation languages. Cullinet Software, Inc. has also acknowledged receiving an exploratory call from CA.

"Customers have always been concerned about whether a vendor is going to be around," says former Uccel Vice-President Peter J. Barris, now president of data center tools vendor Morino Associates, Inc. "Now, they are also concerned about a vendor being swallowed up and what the implications of that are. It's the fear of the unknown."

With an increasing number of companies affected by mergers or takeover threats, more and more MIS executives have seen such effects firsthand and are wary of vendor consolidation.

Gary J. Biddle, vice-president of information services at American Standard, Inc., expressed relief when MSA rejected CA's buyout offer in July, citing the "six months of uncertainty" his department went through as American Standard fended off suitor Black & Decker Corp. earlier this year [CW, July 18].

CA insists that it minimizes the negative factors involved when it acquires a company by announcing layoffs right from the beginning. "We get some bad press because we do it all in one shot and it looks like a bloodbath," says Charles B. Wang, CA chairman and chief executive officer. "I owe it to the employees to tell them where their career stands with CA."

But former employees say the process can lack sensitivity. "Just because they keep you doesn't mean you get to keep doing what you're doing," says Scott Speck, a former Uccel product-line consultant who left five months after the merger was announced. "I had input into three product lines; the day of the merger, I had input into one, and it was the one I liked the least," Speck says. "Their attitude was, 'Here's the new senior VP, and he's going to tell you what you're doing.'"

The "adapt to our style or leave" philosophy is not denied by CA. "The No. 1 prerequisite of working at CA is the ability to adapt to and enjoy a changing environment," says Mark Combs, senior vice-president of research and development in CA's Systems Products Division and a 10-year CA veteran. "When people depart, that's the key reason. We have fairly massive change all the time. That's the real strength of the company."

Although Combs cites "a very low dropout rate on the technical staff" in companies acquired by CA, Speck and others say the most creative development professionals tend to be the least comfortable under CA's management. "People who just want to code from 9 to 5 and go home were probably better off," says one former employee of Soft-



CA's Charles B. Wang

ware International Corp., which CA acquired from General Electric Co. in 1986.

Stifling creativity?

The ex-employee, who requested anonymity because of the number of CA lawsuits against former employees [CW, July 4], left Software International several months after the merger because CA did not heed the input of developers who were familiar with Software International's applications, he says.

"To date, [CA] hasn't blown anything, so I can see how it's easy to get arrogant," he says. "Their attitude toward the rank-and-file developer is, 'This is what you'll do, now do it.' They don't want creative input."

Former Uccel developer Speck agrees: "Those who leave

are the ones who want to feel they have a contributing role. They didn't fire any of the good development people, but we started to lose one a week. You had to reserve your going-away happy hour in advance."

Wang takes strong exception to this view, claiming that about 90% of the development and technical professionals in firms acquired by CA have stayed on.

Being acquired by CA "is a change, but they feel it's a change for the positive," Wang says. "Many companies [that CA has bought] had brought in professional business managers who were financial people, not software people, and the development people are not enamored with that. Technical people really do stay with a software-driven company, and we've been able to retain the geniuses."

CA's demands on its employees are also cited by those who left after an acquisition. "CA is known for setting goals and executing them, which is great for the business," says a former Uccel applications employee. "But they expect 200% from people, and that's where your morale starts to break down."

Another factor is a corporate development culture that, with some notable exceptions — like the CA-Opera console manager — tends to focus on integrating acquired products rather than prototyping new ones. "The vast majority [of systems software research and development resources] go into integrating and maintaining the line and staying current with IBM operating systems," Combs admits.

Wang says CA development as a whole is split about 50-50 between new and existing products but acknowledges that what

CA considers new development includes adding a new function to an existing product.

Sales representatives from acquired companies have left CA in droves by mutual consent. They do not want to work for CA, and CA would rather start from scratch by hiring and training at the entry level, paying low base salaries and high commissions. "We don't hire experienced software salespeople," Wang says bluntly. He estimates that 90% of the former Uccel sales force has departed.

A nimble behemoth

CA's backers and detractors agree that the firm has a unique culture for a \$700 million company — still entrepreneurial, fast on its feet and willing to invest huge sums to seize a market opportunity. "You'll never see an organizational chart at CA," the former Software International employee says. "There are no artificial boundaries. If something makes sense in a particular case, they'll do it."

Such flexibility is a business asset in many ways. "Uccel was beautiful at planning, but the execution was lacking; CA is just the opposite," says P. J. Hoke, a Dallas marketing consultant who worked in Uccel's financial systems division. "I think they have tremendous advantage in getting products out to market."

But some say that the can-do culture, which grew from CA's roots in the IBM DOS/VSE world, has taken some time to adjust to as CA has moved up to the more sophisticated sales and support requirements of the larger MVS shops.

"Our perception to date is that they're a marketing firm, not a support firm," says the

To the top of the heap

Computer Associates, which didn't appear among the top five independent software vendors in 1980, is now far ahead of the pack

Revenue in millions*		
1987	1. Computer Associates	\$649
	2. Microsoft	\$398
	3. Lotus	\$396
	4. Dun & Bradstreet (McCormack & Dodge and others)	\$200
	5. Software AG	\$175
1984	1. Lotus	\$157
	2. Management Science America	\$142
	3. Cullinet	\$118
	4. Computer Associates	\$116
	5. Informatics General	\$115
1980	1. Management Science America	\$48
	2. Cincom Systems	\$34
	3. Policy Management Systems	\$32
	4. Pansophic Systems	\$31
	5. Applied Data Research	\$29

* All figures are for calendar-year revenue

SOURCE: INTERNATIONAL COMPUTER PROGRAMS, INC.
CW CHART

High marks for support

The issue of continued product support is probably the most germane concern of users after a major software company is acquired. Computer Associates has devoted a lot of attention to assuaging those user concerns, and the results, most customers say, have been positive.

For users of former Uccel products, the key was CA's reorganization of its support staff in April this year. "They've come a long way in one year," said Robert Maddock, president of the Seven Eastern Regional Group users organization and assistant vice-president of the First National Bank of Chicago.

"They are faster to respond, and they've organized people into the areas to give you support immediately. Our people told CA they wanted a manual and the next day it was on their desk."

In the reorganization, CA sought to give customers a single focal point for support by creating the new position of product owner. With one exception, those positions have been filled by CA employees who came from the acquired company that developed the product, said Mark Combs, a senior vice-president of research and

development at CA.

Combs said that early glitches in support for Uccel products stemmed in part from Uccel's decentralized organization, which presented a major synergy challenge for CA.

"We didn't have one acquisition to deal with, we had seven, and the customers of every unit had different preconceptions," Combs said. "It was really wild. Now, if there's a technical, support or sales problem, there is one individual responsible for it."

Maddock said CA's size has also helped. "With Uccel, you called Dallas for the answer," he said. "CA has roving systems people in Chicago. They'll come in and hold your hand."

Users of CA's older products say that support has remained consistent with what they received before a product's vendor was acquired by CA.

Johnson Systems, Inc. "did a good job supporting Jars, and it's not gotten any better or any worse since CA acquired it," said Donald Nelson, group supervisor of technical support at Morton Thiokol Corp.'s Huntsville, Ala., division.

CLINTON WILDER

Who's next?

Speculation about Computer Associate's next move is a favorite pastime in the software industry. What follows is a brief scorecard on who might be next to join the company's stable.

McCormack & Dodge. Long rumored to be on the Dun & Bradstreet Corp. auction block for the right price, the Natick, Mass., mainframe applications veteran is a logical place for eyes to turn after MSA rebuffed CA last month. M&D's installed base and applications expertise would be coveted. Drawbacks for CA: Dun & Bradstreet drives as hard a bargain as CA's Wang and the possible opposition of still-in-charge cofounder Frank Dodge.

MSA. Some speculate that the recent resignation of MSA President William Graves might presage renewed CA interest, but the odds appear slim. "It's a dead deal," says Drexel Burnham Lambert, Inc. software analyst Terence Quinn. "CA already offered

50% above the stock trading price."

Cullinet. A big database management system installed base would mean a nice recurring revenue stream for CA, but the major selling point could be Cullinet's high-profile line of DEC software. CA, with a hungry 50-member DEC sales force, is on the prowl for DEC products, large and small. Cullinet's depressed stock price is attractive, but founder-in-charge factor looms here, too.

ADR. As with Cullinet, CA potentially covets nonflagship products (like fourth-generation language Ideal) more than DBMSs. Price is an issue; Ameritech paid \$215 million for ADR in 1985.

Long shots. CA might find certain synergies among other major systems software houses, but product overlap is a major issue — as is the desire of many of these companies to remain independent and make their own acquisitions.

Worth keeping an eye on are

A six-year shopping spree

Computer Associates has spent more than \$1 billion on acquisitions since 1982

Year	Acquisition	Price	Key products
1982	Capex	\$22.5M (stock)	IBM OS systems software
'83	Stuart P. Orr Associates	Undisclosed	Accounting and distribution applications for IBM and Data General shops
	Information Unlimited Software	\$9.5M	Easy series of microcomputer business software
'84	Sorcim	\$26.5M	Supercalc micro spreadsheet
	Johnson Systems	\$16M	Data center management products, including what is now CA-Jars
	Arkay Computers	Undisclosed	Focus, a DOS-to-MVS conversion program; renamed CA-Convertor
'85	Value Software	Undisclosed	IBM OS/MVS operations management products
	Top Secret from CGA Computer	\$25.2M	Top Secret data security program
'86	Issco	\$67M (stock)	IBM and DEC VAX graphics applications
	Software International from General Electric	\$24M	Masterpiece series of accounting applications
'87	Uccel	\$800M (stock)	Tape and disk management, job scheduling and security products; banking applications

SOURCE: SECURITIES AND EXCHANGE COMMISSION FILINGS AND COMPUTERWORLD CW CHART

Pansophic Systems, Inc., Duquesne Systems, Inc., Morino Associates, Inc., Sterling Soft-

ware, Inc., On-Line Software International, Inc., VM Software Inc. and DEC applications

vendor ASK Computer Systems, Inc.

CLINTON WILDER

MIS director of a Southeastern hospital running MVS/XA. "I've not seen a lot of depth."

Some users — even in DOS shops — object to CA's go-getting, discounting approach. "If you say no to them, they then cut their price and tell you what a deal you're getting. I don't appreciate it one bit," says Kirk Knott, systems and programs manager at Minnesota Title Financial Corp. in Minneapolis.

Others like CA's constant attention. The firm is very good at blanketing customers with literature and sending sales agents out to press the flesh. "I see my CA rep here on-site, where I haven't heard from other vendors," says Arthur Winkler, supervisor of DP and development at J. I. Case Co.'s manufacturing group in Burlington, Iowa.

"They're intently interested, to the point of abuse," says Donald Nelson, group supervisor of technical support at Morton Thiokol, Inc.'s Huntsville, Ala., divi-

sion. "They prepare demos and show us products and products and how they fit into our environment."

Square pegs

The hard-sell approach in systems software, however, has encountered a major cultural clash in vertical market applications such as banking. Donald Steele, former vice-president and general manager of Uccel's financial systems division, says he saw that clash when CA took over Uccel's line of mainframe banking products.

"CA believes in hiring young, inexperienced salespeople and seeing if they survive," says Steele, now president of Sunnyvale, Calif.-based Syntelligence, Inc. "They don't understand the six-month selling cycle and the consultative solution sell that you need for end-user-driven applications."

"Being successful in systems doesn't guarantee success in ap-

plications," Wang admits. "We prefer the applications sales force to have some business and accounting background, but they must service the account the same way the systems side does. Applications will always be a part of the growth strategy at Computer Associates."

A major issue for CA is how well it can adapt to the different markets, especially applications and database management, in which it yearns for the dominant position it holds in systems software. "Bigness is not the issue," Wang says. "We want to be known as the software vendor for corporate America."

During the last two years, CA has pursued a goal of becoming a one-stop software shop for MIS customers, but that target draws a mixed reaction from customers, some of whom fear CA may spread itself too thin.

"The river that runs a mile wide usually runs an inch deep," says the MIS executive from the

Southeastern hospital.

Some worry that CA may become too much like the only other billion-dollar-plus software company in the mainframe world: IBM. "IBM is a multi-billion dollar software company, and their software stinks," Newell's Johnson says. "CA could wind up in the same position IBM's in today."

But others, including some of CA's direct competitors, say such concentrated market power may not be all bad. "It's not just CA, but the customer base of consolidating vendors is another balancing force to IBM," Morino Associates' Barris says. "CA's growth can be good or bad — we'll have to wait and see. But it has changed the industry."

Out with the old

Merger specialists say that preserving corporate culture is an important issue in an acquisition, and Computer Associates agrees. But the culture CA wants to preserve is its own.

CA makes a deal to acquire products and customers, not managers. "We try to make sure our philosophy and culture doesn't get lost in our size," says Chairman Charles B. Wang. "If we promote our people from within, our own management style will be preserved as we grow."

There are some notable exceptions; CA Senior Vice-Presidents Michael Fisher and James Schenck were principal executives with Capex Corp. and Stuart P. Orr Associates, respectively. But in the more recent takeovers, the highest management of the acquired firm has generally departed.

Elsewhere in the computer industry, the chief executive officer of an acquired company is often given a top management post and sometimes placed on the board of the acquirer. But CA's brain trust — Charles Wang, his brother Anthony W. Wang, and Executive Vice-Presidents Russell M. Artzt and A. David Tory — has been essentially unchanged, even as the company has quadrupled in size since 1984.

At Uccel, eight top executives had strong incentive to leave by Sept. 30, 1987. According to Securities and Exchange Commission filings, Uccel Chairman Gregory Liemandt negotiated severance packages for his seven top executives prior to the takeover. For example, Vice-President Peter J. Barris collected \$1.5 million, Executive Vice-President B. Tom Carter Jr., \$1.4 million and Vice-President Donald L. Steele, \$1.1 million.

CLINTON WILDER

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TRENDS

Electronic data interchange

The advent of electronic data interchange (EDI), a standard by which sellers and buyers can make business transactions electronically, is having burgeoning effects on the Fortune 1,000.

A recent EDI study compiled by Mountain View, Calif.-based consulting company Input discovered that, in a sampling of 200 MIS managers at Fortune 1,000 companies, most corporations are interested in installing EDI. Only 22% of those interviewed said they have no plans to implement the standard.

According to Victor Wheatman, EDI program manager at Input, many companies are feeling pressure to conform to the EDI standard. "For these companies, EDI is not just a competitive weapon, it is a requirement by their larger trading partners," he said.

In surveying existing EDI installations, Input found that nearly 50% of the respondents said their customers demanded an EDI link for buying and selling.

According to Wheatman, the cost of processing a purchase order using manual methods compared with using EDI is a ratio of 10-to-1. Wheatman said a final purchase order costs \$49 to process manually, compared with \$4.70 using EDI.

During the past three years, awareness of EDI has grown among MIS leadership, Wheatman said. "This is important because top management has to be sold on EDI before it can be successful," he said.

Bringing EDI to the attention of MIS is just the start, however. "EDI must be supported by all levels because it involves the entire company," Wheatman added.

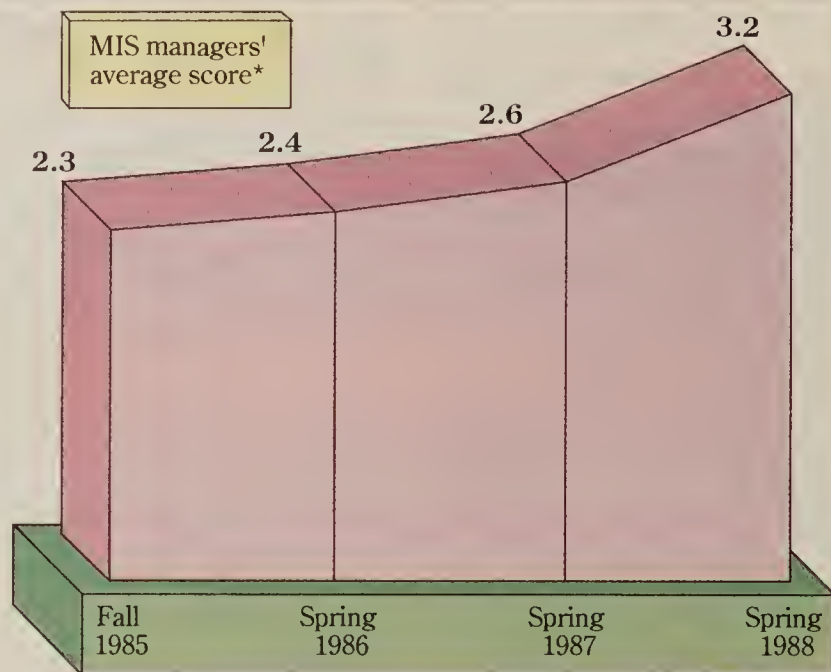
In recent years, many top corporations have already implemented EDI and witnessed positive results. A few of the biggest EDI proponents include Eastman Kodak Co., Mervyns Co. and 3M Co.

IBM and Digital Equipment Corp., for example, have large EDI installations in their manufacturing facilities in which they buy products electronically from their suppliers.

DEC claims it has reduced the cost of processing a purchase order from \$125 to \$32. IBM is reportedly so convinced of EDI's value that it will make all 2,000 of its vendors buckle under to conform to EDI within three years.

KATHY CHIN LEONG

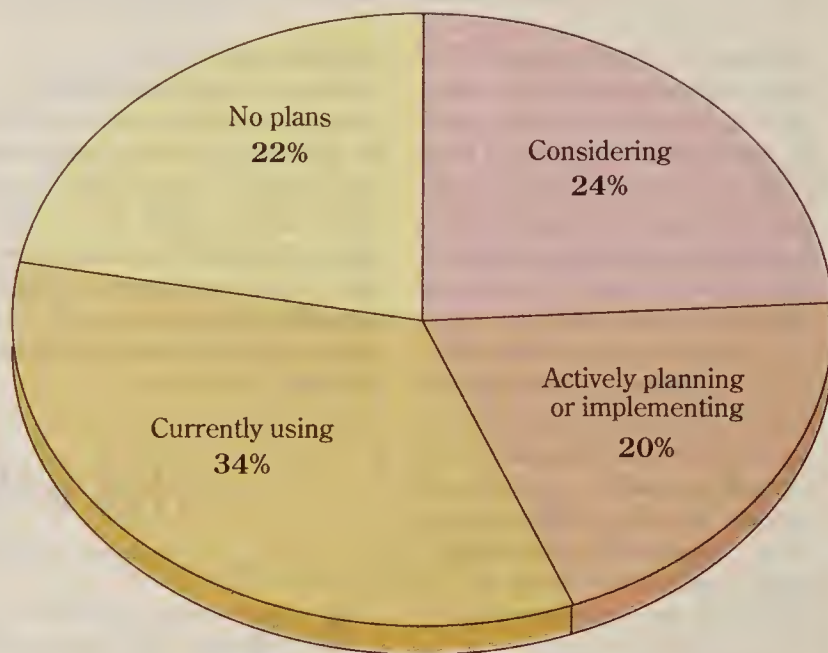
Survey shows EDI awareness growing



*200 MIS managers at Fortune 1,000 companies rated their awareness of EDI, based on a scale from 1 to 5; 1 = low awareness, 5 = high awareness

More than 50% use or are planning EDI

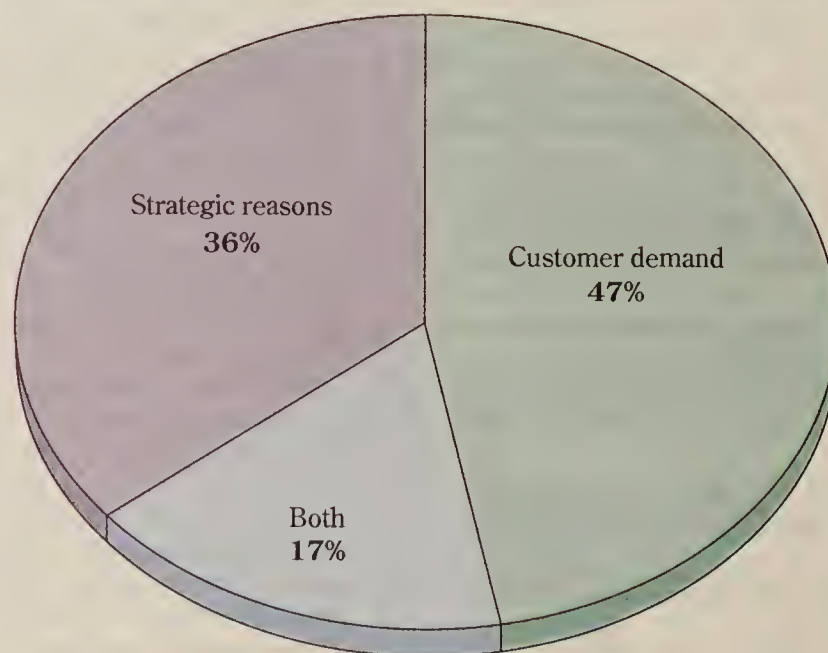
PERCENT OF RESPONDENTS*



*Base of 200

Why they implemented the standard

PERCENT OF RESPONDENTS WHO HAVE IMPLEMENTED EDI



SOURCE: INPUT
CW CHARTS

INSIDE LINES

This token's not smokin'. The 16M-bit Token-Ring rumor mill heated up last week with a report from a source close to IBM who said that the 16M-bit card will not be introduced in September after all. Due to performance problems, the introduction is being pushed back to the fourth quarter. Our guess is November, which is when IBM originally planned to unveil the successor to its 4M-bit card. The problems are said to be related to throughput and may stem from software on the board itself. Another wag notes that it's not for nothing that Tandy and Dell Computers have backed off their Micro Channel Architecture-based personal computer clones. She points out that IBM has incorporated a great deal of proprietary code in MCA microcode. Not only are some competitors unprepared to cope with it, but among divisions, IBM too may be experiencing some problems.

Maybe it was silver? While rumors of Ameritech selling software unit ADR were hot and heavy, some sources with contacts at ADR said that firm's top management recently negotiated "golden parachute" deals, with Ameritech's blessing. An ADR spokesman said "absolutely no golden parachutes have been given" but added that "several senior managers' contracts had expired and were renewed as a normal course of business."

DEC looking up. A DEC analyst predicts that the VAX 6200 series will be expanded from a maximum of four processors to six in November. With six processors, the 6200 would overlap the higher end VAX 8800 series in power. Also, the analyst notes, DEC is cooking up a CMOS version of the Microvax II capable of 1.5 to 2 MIPS.

Friends in need. Tandem employees are being forced (the company says "encouraged") to take accumulated vacation in the next few weeks because of the company's poor showing on last quarter's financial report. This, along with a de facto hiring freeze, according to insiders, is an attempt to wipe out a little of the company's debt for this quarter's balance sheet. Meanwhile, a member of Tandem's original management team, Dennis McEvoy, has been forced out of the company. Back in June, Tandem President Jimmy Treybig described McEvoy as "a terrific person," adding that Treybig was on sabbatical in China and would come back to the company; now he's gone for "personal reasons."

Good things come to those who wait. Macintosh users anxious for a little Apple-branded Transmission Control Protocol/Internet Protocol support can rest easy. Although never formally announced by Ungermann-Bass, it's been pretty well leaked that UB is writing Apple's TCP/IP driver. The only thing left under wraps is just when the drivers will ship. At Macworld Expo/Boston, Apple's network maven, Girshwan Sidhu, declined to give a specific ship date but did suggest we won't have to hold our breath too much longer. UB spokesmen refused to comment other than to agree it may be useful to call in about a month.

Yes, no, maybe! When Microsoft first unveiled its OS/2 LAN Manager, the doomsayers began predicting the demise of Novell. The Utah-based network software vendor's propensity for doing things its way, which usually manifests itself in an unwillingness to license any technology that it can toss a shell around, was expected to finally trip up the LAN kingpin. Unless, of course, Novell bit the bullet and licensed LAN Manager. While the two have hinted at talks in the past, the latest we hear from a source close to Microsoft is that those talks are at a stalemate. Novell's Craig Burton only wants to license the LAN Manager kernel, but Bill Gates is saying all or nothing, the source says. Stay tuned.

We quail at the thought! Here's two guys running for president with as much personality between them as in Spiro Agnew's back pocket, and the campaign so far has been one of the most spirited in recent history. Is it just a summer anomaly? Will Labor Day bring on National Boredom Month? Say it ain't so; better yet, call the hot line at 800-343-6474 or 508-879-0700 and give News Editor Pete Bartolik some hot tips on the politics of the computer world so we can keep the industry abuzz.

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They make our systems quick to implement and easy to use. And, they are not pressured by management to rush products out the door. At Data Design, R & D doesn't stand for "Rushed & Desperate."

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